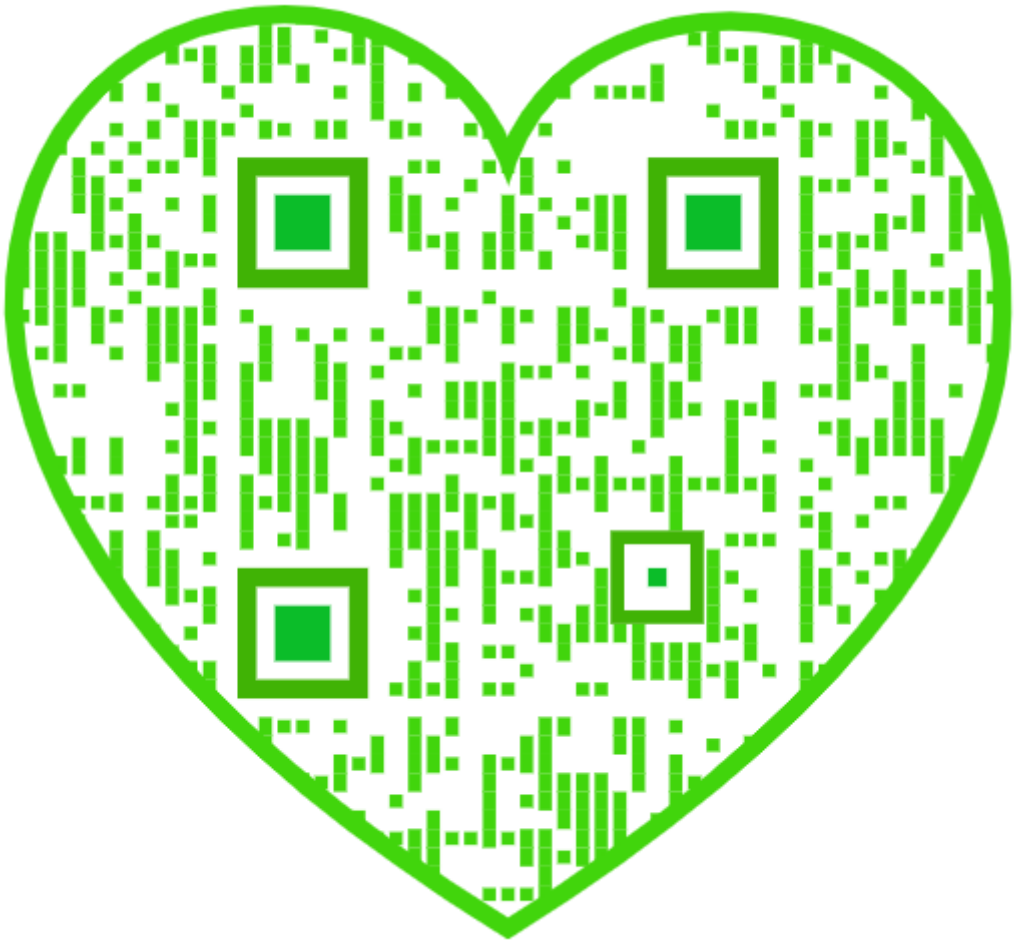

THE ARCHITECT AND ENGINEER

AN ILLUSTRATED MONTHLY MAGAZINE OF ARCHITECTURE AND ENGINEERING

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JANUARY—DECEMBER

1919

PUBLISHED BY

THE ARCHITECT AND ENGINEER, INC.

627-629 FOXCROFT BUILDING, SAN FRANCISCO

A. I. Whitney, Manager *Fred'k W. Jones, Editor*

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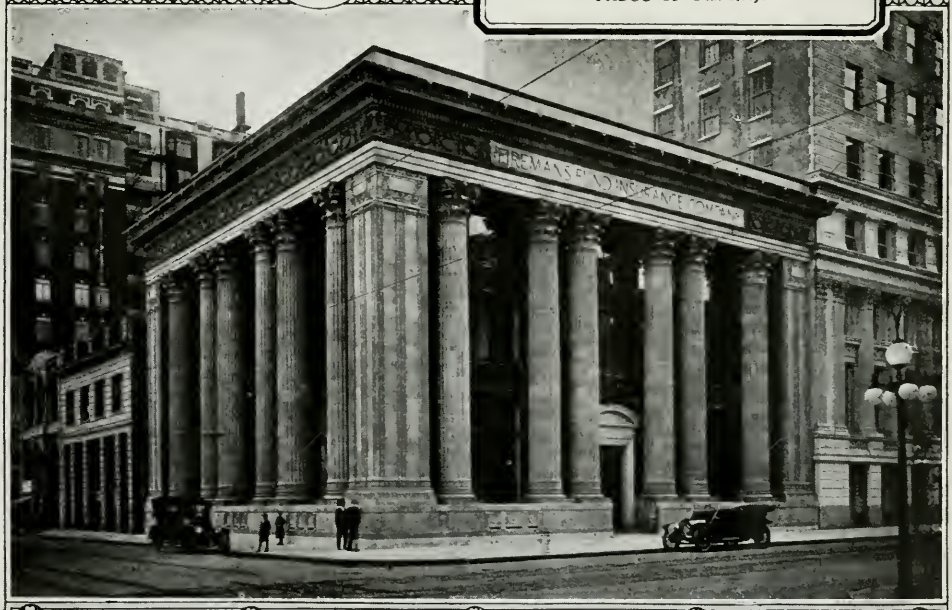

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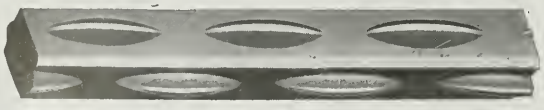

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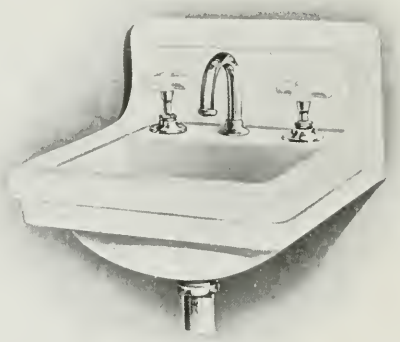

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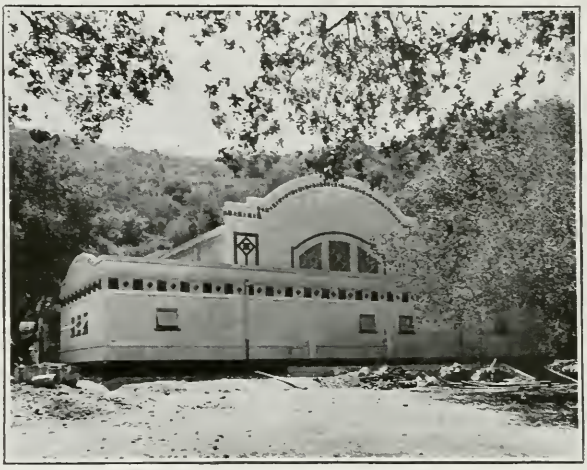

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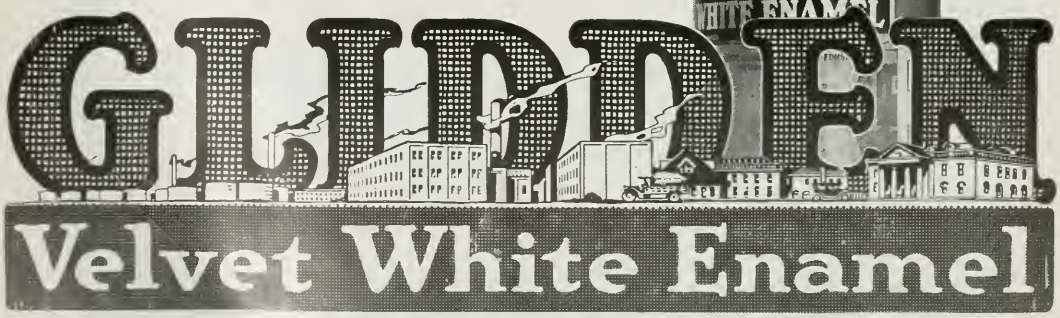

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CHEMICAL FIRE EXTINGUISHERS and FIRE ENGINES

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SPECIAL PRICES TO ARCHITECTS AND CONTRACTORS

KELLER & COYLE

233 GRANT AVENUE, SAN FRANCISCO
Telephone SUTTER 180

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT
Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market street, San Francisco.
Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT GUN
Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
W. E. Mushet Co., 502 Mission St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.

COLD STORAGE PLANTS—Continued
Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
United Electric Co., Canton, O., mfr, of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
Barrett & Hilp, Sharon Bldg., San Francisco.
Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.
Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.

CONCRETE REINFORCEMENT
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
Steel bars sold by W. S. Wetenhall Co., 725 Second St., San Francisco.

CONCRETE SURFACING
"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL
Barrett & Hilp, Sharon Bldg., San Francisco.
Herbert Beckwith, 412 Call-Post Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Houghton Construction Co., Flatiron Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.

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Telephone Sutter 5898 F. P. DRESEL, District Manager

FEDERAL MUTUAL LIABILITY INSURANCE COMPANY

Mills Bldg., Bush & Montgomery Sts. San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GENERAL CONTRACTORS (Continued)
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- T. B. Goodwin, 110 Jessie St., San Francisco.
- McLeran & Peterson, Sharon Bldg., San Francisco.
- Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
- Harron, Rickard & McCone, Townsend St., San Francisco.
- Lansing Company, 338 Brannan St., San Francisco.
- Garfield & Co., Hearst Bldg., San Francisco.

CONVEYING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
- P. H. Reardon, 57 First St., San Francisco.

CORK TILING, FLOORING, ETC.
- Bevcr Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK
- California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- "Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
- Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
- Stanley Works, New Britain, Conn.
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Engineering Co., 530 Folsom St., San Francisco.
- Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
- NePage, McKenny Co., 589 Howard St., San Francisco.
- Newbery Electrical Co., 413 Lick Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Globe Electric Works, 1959 Mission St., San Francisco.
- H. S. Tittle, 766 Folsom St., San Francisco.
- Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HEATING AND VENTILATING MATERIAL, ETC.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

HEATING AND VENTILATING (Continued)
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralph-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Trussed Kahn Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

NASON'S OPAQUE FLAT FINISH A FLAT, WASHABLE OIL PAINT, made in soft Kalsomine tints—a practical article for WALLS, CEILINGS, Etc. Economical and Durable. Agency TAMM & NOLAN COMPANY'S high grade Varnishes and Finishes, made on the Pacific Coast to stand our climatic conditions.

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CLARENCE E. MUSTO. Pres. JOSEPH B. KEENAN. Vice-Pres. GUIDO J. MUSTO, Sec'y & Treas.

JOSEPH MUSTO SONS-KEENAN CO.

Phone Franklin —6365— MARBLE OFFICE AND MILLS: 535-565 North Point St., SAN FRANCISCO, CAL.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Crude Oil Burner Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

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- Miller-Enwright Co., Sacramento.
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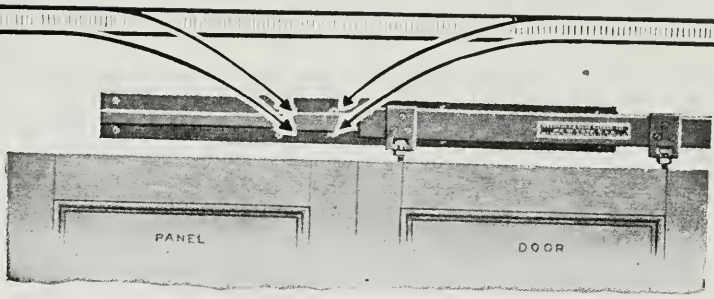

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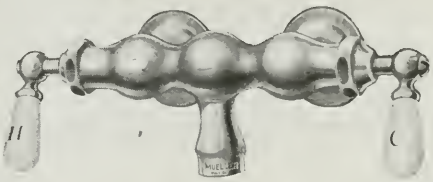

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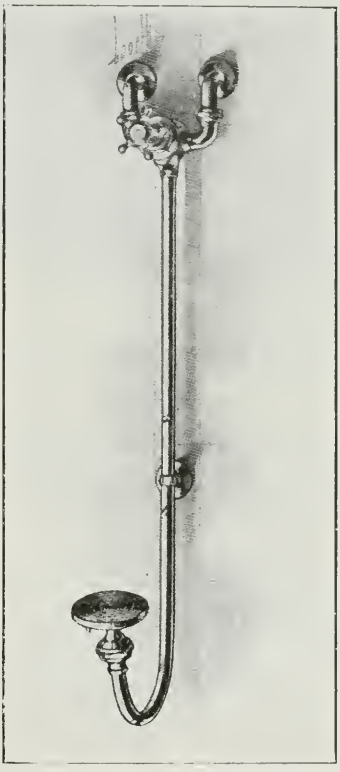

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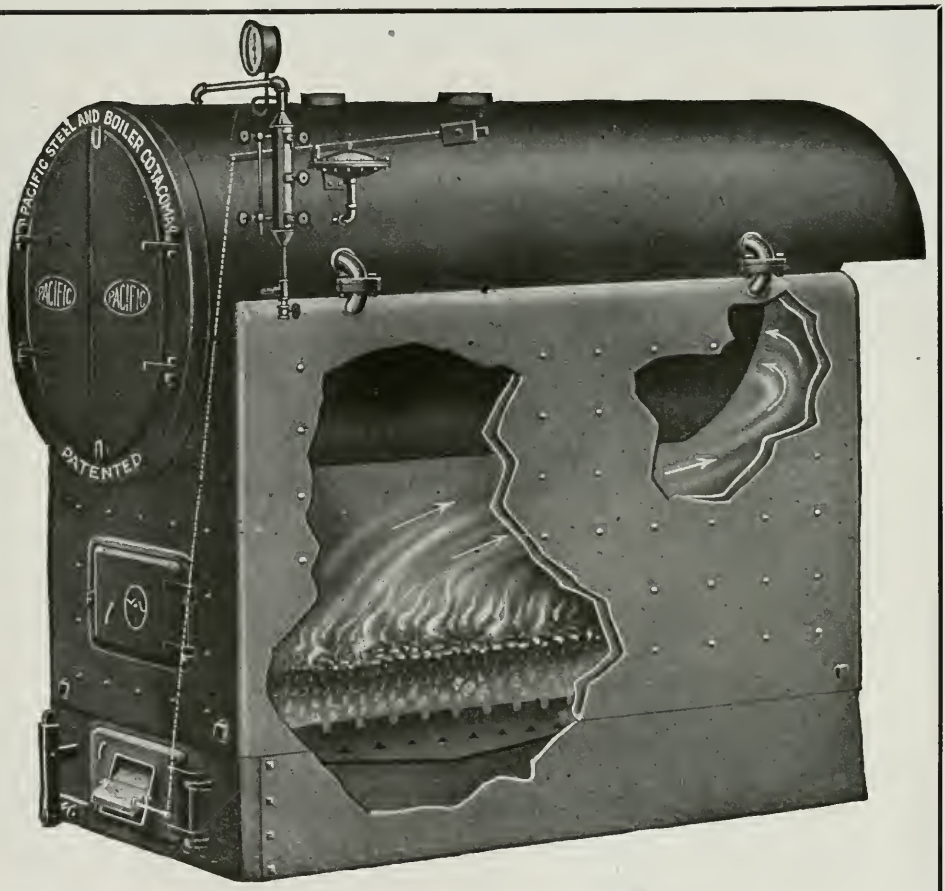

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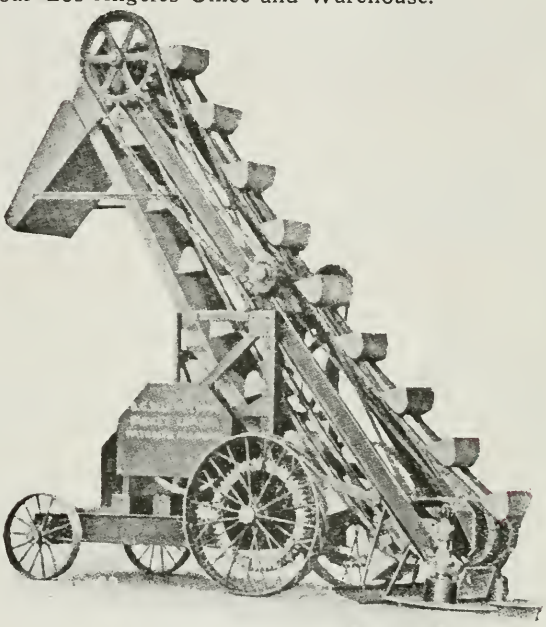

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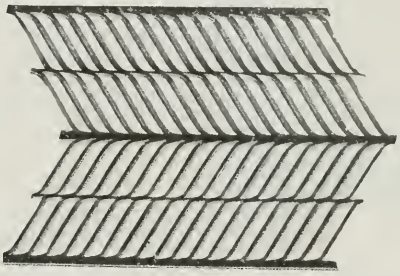

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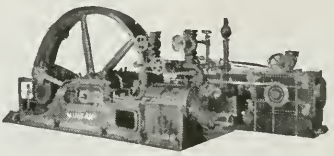

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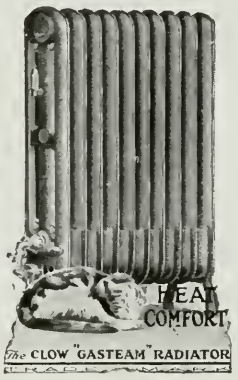

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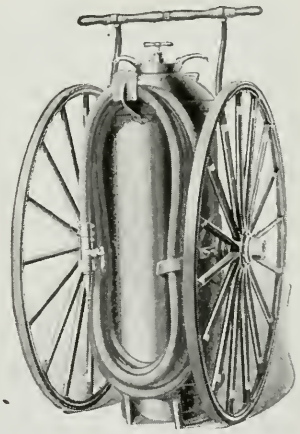

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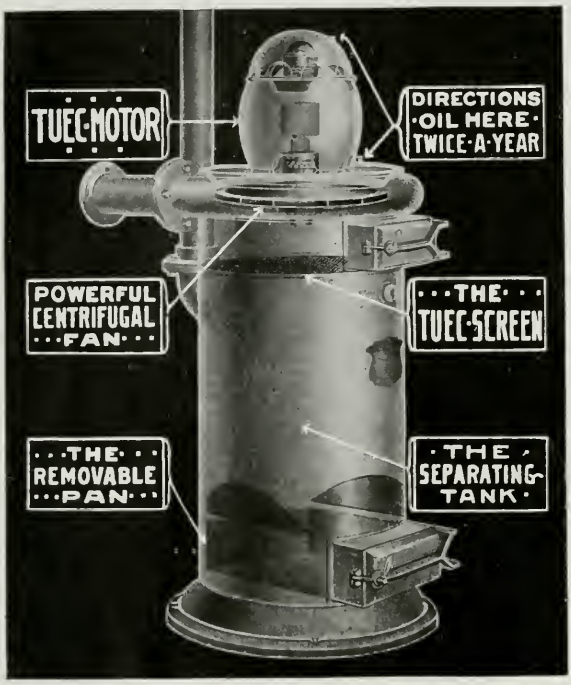

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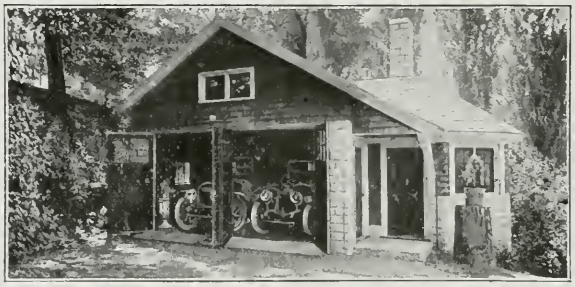

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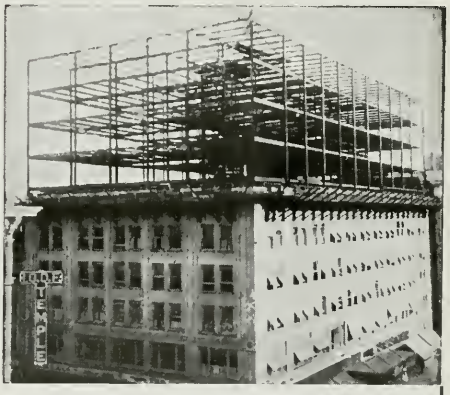

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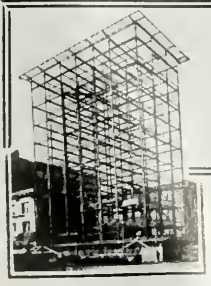

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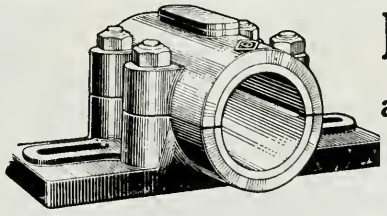

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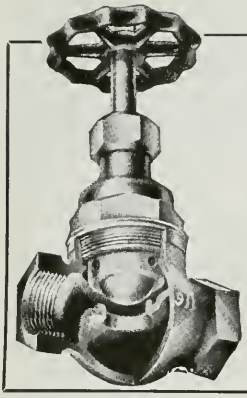

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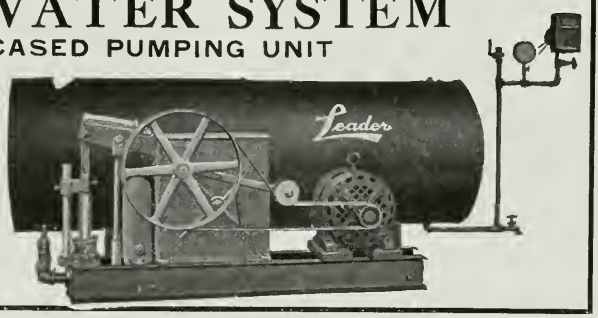

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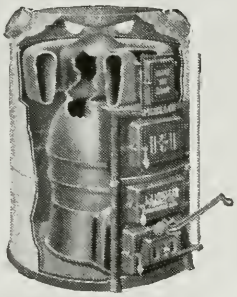

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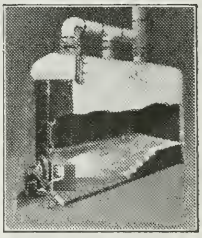

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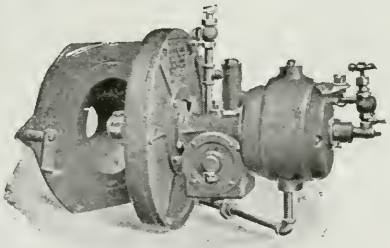

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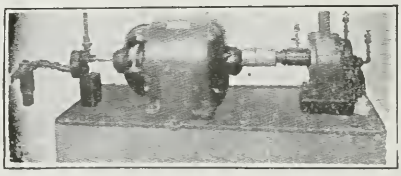

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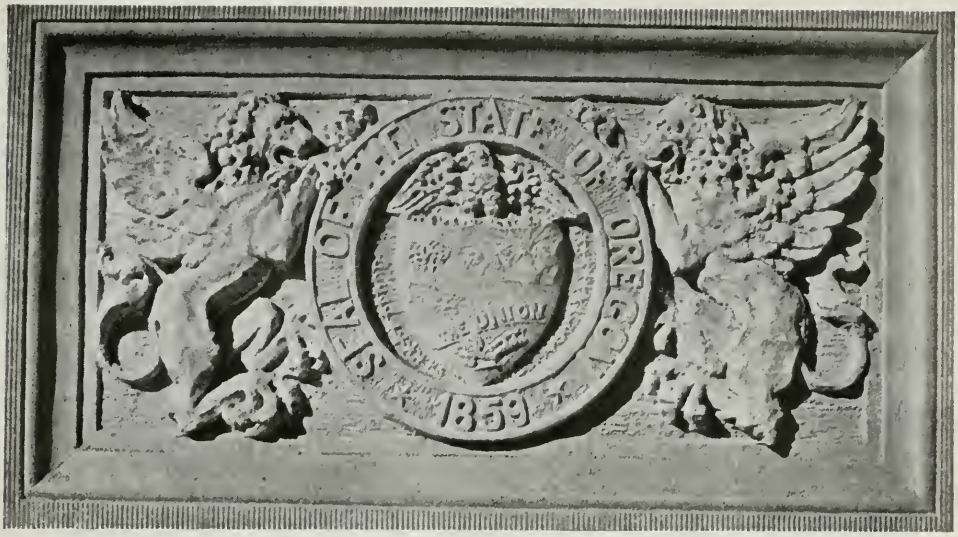

STONE CARVING IN BALUSTRADES, CENTRAL LIBRARY, PORTLAND, OREGON
A. E. Doyle, Architect

THE ARCHITECT AND ENGINEER

Volume LVIII. Incorporated Number 1.

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Published Monthly by
THE ARCHITECT AND ENGINEER
INCORPORATED
626-627 FOXCROFT BUILDING, SAN FRANCISCO
A. I. Whitney, Pres. Fred'k W. Jones, Vice-Pres.
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CENTRAL LIBRARY, PORTLAND, OREGON
A. E. DOYLE, ARCHITECT

THE
ARCHITECT
AND
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JULY, 1919 Vol. LVIII. No. 1

The Work of Albert E. Doyle, Architect of Portland, Oregon

By CHARLES H. CHENEY

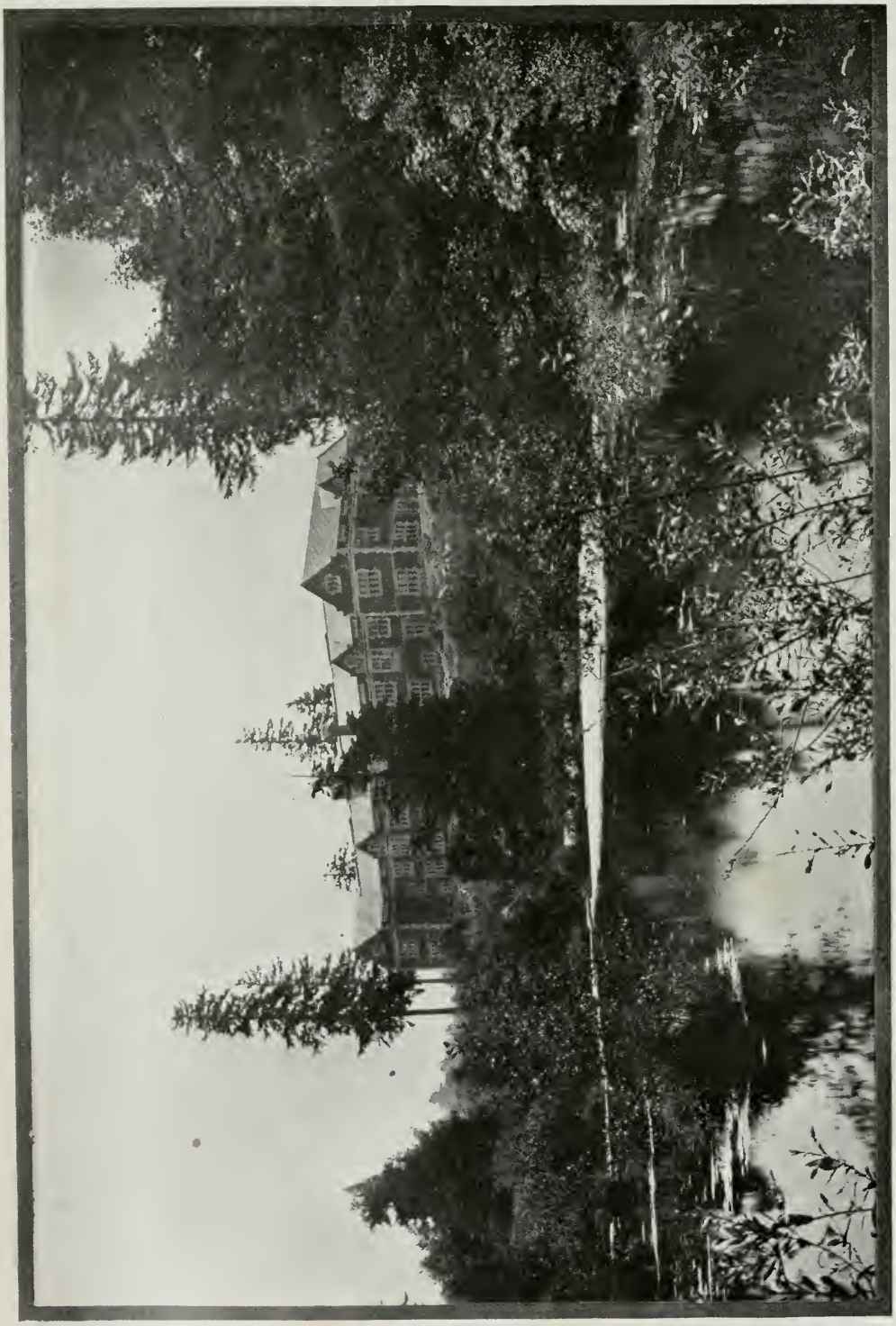
IT is a great satisfaction to the architects of the Pacific Coast to acknowledge pridefully the work of a man who was born in California, as late as 1877, and who laid the foundation of his art in the office of a Western firm of architects. Mr. Doyle worked for twelve years with Messrs. Whidden & Lewis of Portland, Ore. Then he had three years in New York City and a year in Europe, including some precious months at the American School in Athens.

In 1908 Mr. Doyle formed a partnership with Mr. W. B. Patterson, a superintendent of construction, under the firm name of Doyle & Patterson. In 1910 Mr. J. G. Beach, a structural engineer, was also given an interest in the firm, which was known as Doyle, Patterson & Beach from 1910 to 1912. The partnership was finally dissolved in 1914, since which time Mr. Doyle has been practicing independently.

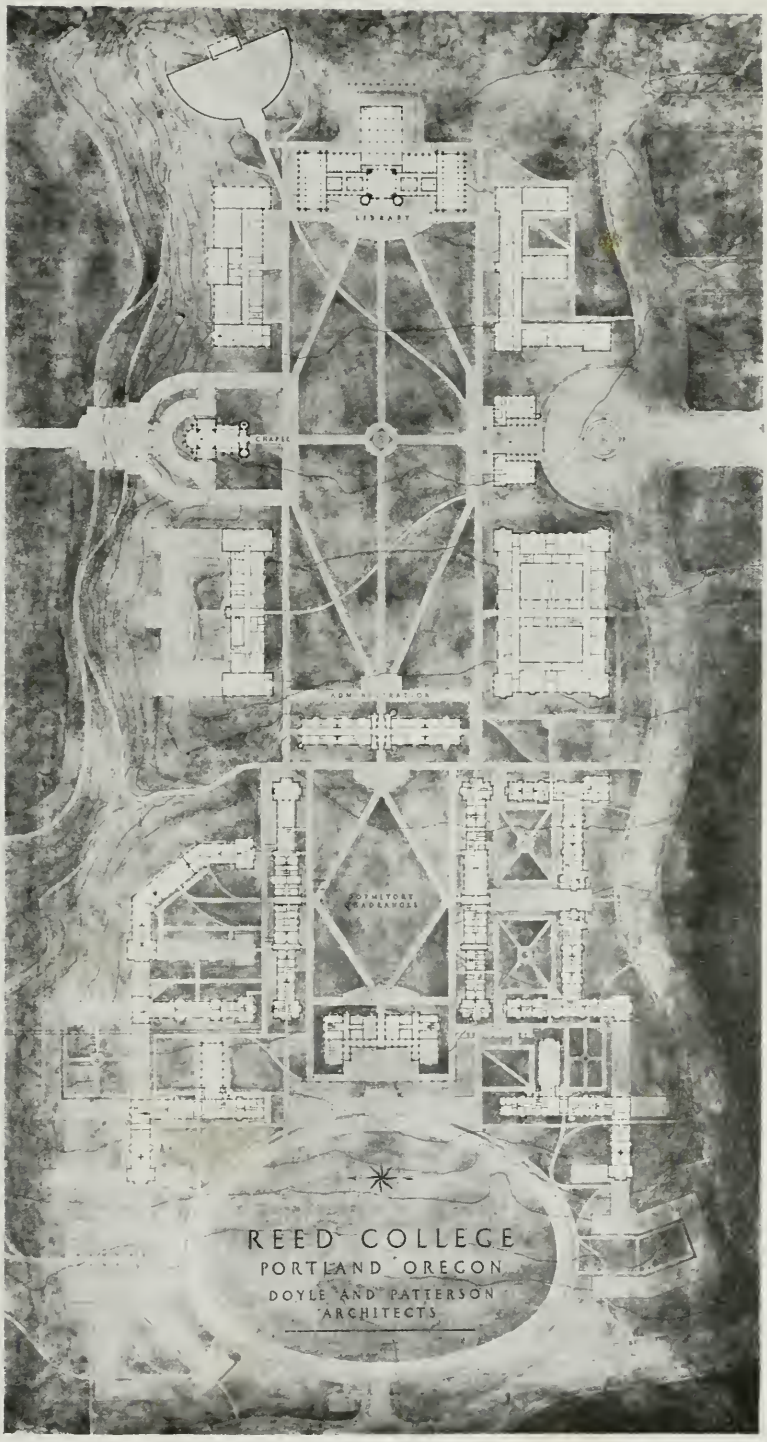
Fortunately Portland has several examples each of different types of buildings designed by Mr. Doyle, all of which express well not only their usefulness and the careful planning and ingenious arrangement of the requirements of the client, but also some of them are so distinctly above the ordinary as to be considered of national artistic importance. The exteriors are harmoniously and attractively designed and appropriate to the interior plan. They show vigor and charm, but no photo can reproduce the exquisite color sense which Mr. Doyle has shown in the selection of his material and in the painting of these buildings.

The recent architectural jury named by the Oregon Chapter of the American Institute of Architects, of which it was the writer's privilege to be a member, were impressed by these points in Mr. Doyle's buildings, and four of his buildings were unanimously selected as in their opinion among the ten most notable examples of architecture in Portland. These were the Reed College buildings, the Central Public Library, the United States National Bank, and the residence of Mr. F. J. Cobbs.*

* For full report of jury see Architect & Engineer of March, 1919.



MAIN BUILDING, REED COLLEGE
NORTH ELEVATION
A. E. DOYLE, ARCHITECT


LIBRARY
CHAPEL
REED COLLEGE
PORTLAND OREGON
DOYLE AND PATTERSON
ARCHITECTS

REED COLLEGE, HALL OF ARTS AND SCIENCE
A. E. Doyle, Architect

The Reed College work has perhaps been the most interesting Mr. Doyle has done. He has contrived exceedingly well to get the spirit of the old English Collegiate Gothic while adapting his style to present-day conditions. The general plan is a simple double quadrangle for the teaching and dormitory groups, of which the two buildings already constructed form in each case one of the north side units.

This college was wise in preparing a comprehensive plan for future growth, as already its needs are far beyond the present buildings and new units will fit in nicely with the present designs.

There is splendid handling of the various elements of windows and wall surfaces, roofs, gables, bays and chimneys, as the accompanying reproductions show, but they cannot visualize the richness of color contrasts so well handled by Mr. Doyle in his choice of materials of construction. "The best part of beauty is that which a picture cannot express."

In viewing these Reed College buildings one finds there are many little interesting subtleties in the design and details that are not apparent at first; things that should delight the students in discovering, such as the seals of over eighty of the leading universities and colleges of the world, carved in stone in various places, with odd early English carving. The seal of Reed College and crest of the Reed family are used in different ways. But while taking the best of this fine old style Mr. Doyle has not let himself be intrigued into copying details appropriate to the Old Country only. Instead of the English Lion and Unicorn as finials, conventionalized typical Oregon animals have been used in the most interesting way.

REED COLLEGE DETAIL
A. E. DOYLE, ARCHITECT

ENTRANCE DETAIL
REED COLLEGE
A. E. Doyle,
Architect

"STAIRCASE
OF EMULATION"
REED COLLEGE
A. E. Doyle,
Architect

REED COLLEGE ENTRANCE DETAIL
A. E. Doyle, Architect (Original Drawing)

The "staircase of emulation," leading to the chapel, is finished in stone and brick with heavy oak paneling, the panels being removable to be replaced some day with memorial carved panels to distinguished Reed students, and the brick walls may have bronze memorial tablets inserted, making in years to come a memorial stair of the place.

In the Dormitory wing, of one hundred and twenty or more rooms for boys, there are no two rooms exactly alike, or exactly the same size, an individuality being sought that would appeal to the students. All the entrances are quite different in design. These buildings are fireproof throughout, the exterior being of red tapestry brick with trim of white Bedford Indiana limestone. The roof is of flat English tile, in a variety of shades of green laid at random and the interior finish is of Flemish oak.

The Residence of Mr. F. J. Cobbs on Portland Heights

In this house just recently finished Mr. Doyle has again employed the English Tudor style to great advantage. The combination of materials used gives an exterior effect, rich in color and tying in most effectively to take greatest advantage of a magnificent site. The house is designed to fit the natural contour of the ground and to preserve a number of very fine existing trees; the exterior is a combination of red brick, stone and cement

ENTRANCE DETAIL, REED COLLEGE
A. E. Doyle, Architect (Original drawing)

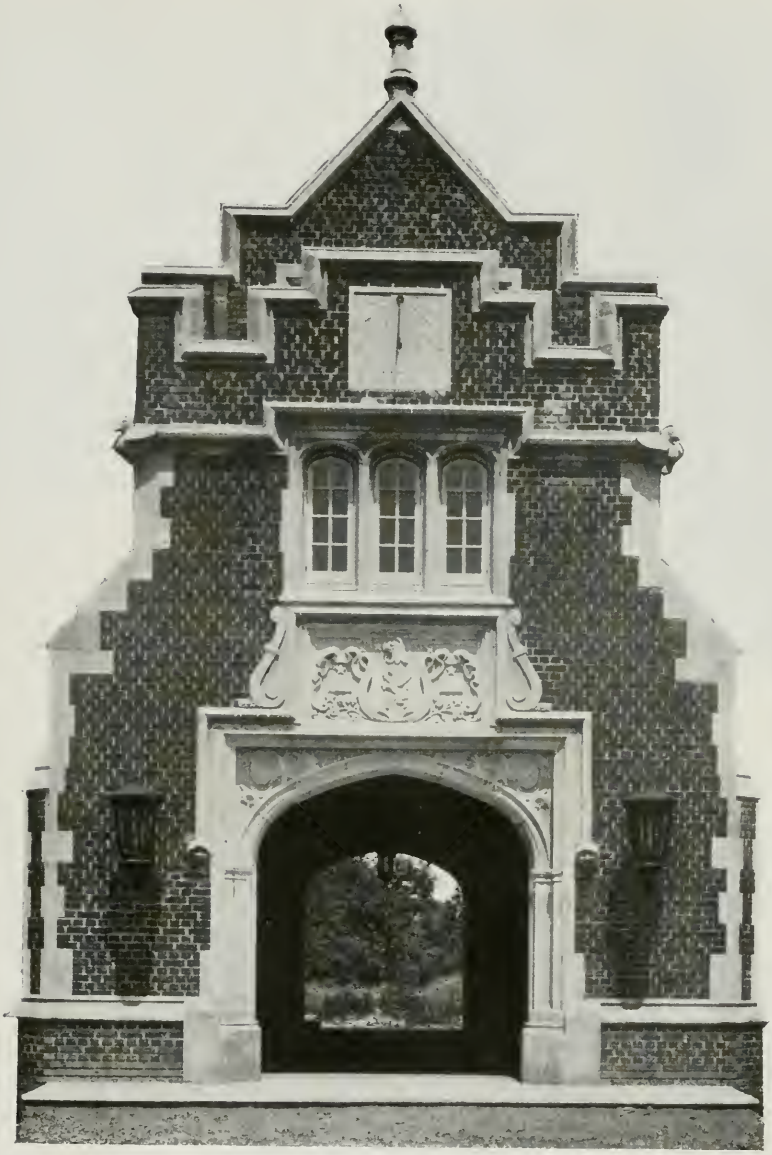
plaster with a roof of graduated slate in a variety of colors. The interiors downstairs furnish some magnificent large rooms, paneled in English oak, opening up very well for entertaining.

Another house in particular is of unusual merit and reproduced here—the summer home of Mr. Edward Ehrman on the Columbia Highway, 22 miles east of Portland. It is of charming English design in plaster and shingles, the main feature being a large living room finished in stone and rough plaster, and paneled in very simple early English style. The great stone fireplace has an opening six feet high and nine feet wide and is four and one-half feet deep. "Lucullus answered Pompey well, who, when he saw his stately galleries and rooms so large and lightsome in one of his houses, said, 'Surely, an excellent place for summer, but how do you in winter?' Lucullus answered, 'Why, do you not think me as wise as some fowls are, that ever change their abode towards the winter?'"

It is to be regretted that such a highly artistic group of buildings as the farm house, stables, etc., on the estate of Mr. W. B. Ayer are not available also, as they show Mr. Doyle at his best.

The Central Public Library

The clean-cut handling and simple design of this building show the architect's distinct ability in the classic style, quite different from his pre-

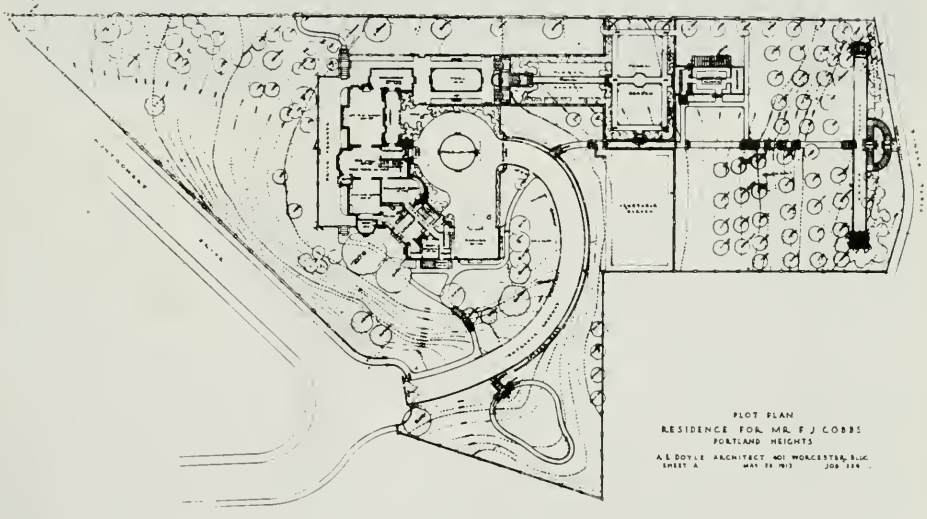


REED COLLEGE, ENTRANCE DETAIL
(As executed)

REED COLLEGE DETAIL
A. E. Doyle, Architect

SEAL OF REED COLLEGE
A. E. Doyle, Architect

NORTH FRONT—RESIDENCE FOR MR. F. J. COBBS, PORTLAND, OREGON
A. E. Doyle, Architect



PLAN, RESIDENCE FOR MR. F. J. COBBS, PORTLAND
A. E. Doyle, Architect

SOUTH OR GARDEN FRONT—RESIDENCE FOR MR. F. J. COBBS, PORTLAND, ORE.
A. E. Doyle, Architect

viously mentioned Tudor Gothic buildings, and yet more than equally successful. In this connection, "there is a popular idea," as an Eastern journal recently pointed out,* "which like many other popular ideas is based upon the modern fetich of specialization, that architects are best in some one style or type of work. The actual fact is that an able architect deals ably with any type of work he undertakes. Mr. Doyle is an example."

This is a building built around a stack space for books, as the library authorities required, the various large rooms, public space, etc., being most economically arranged, with no lost space.

The problem is well handled considering the small amount of funds at the disposal of the architect. The exterior is dignified, impressive, and simple, yet forcefully expressing the large interior rooms. While the entrance hall downstairs shows the needs of tapestries or of some rich color in the form of mural paintings that can be applied later, the second story or main

* The Architectural Review for June, 1919, reviewing the report of the Portland Architectural Jury in the March Architect & Engineer.

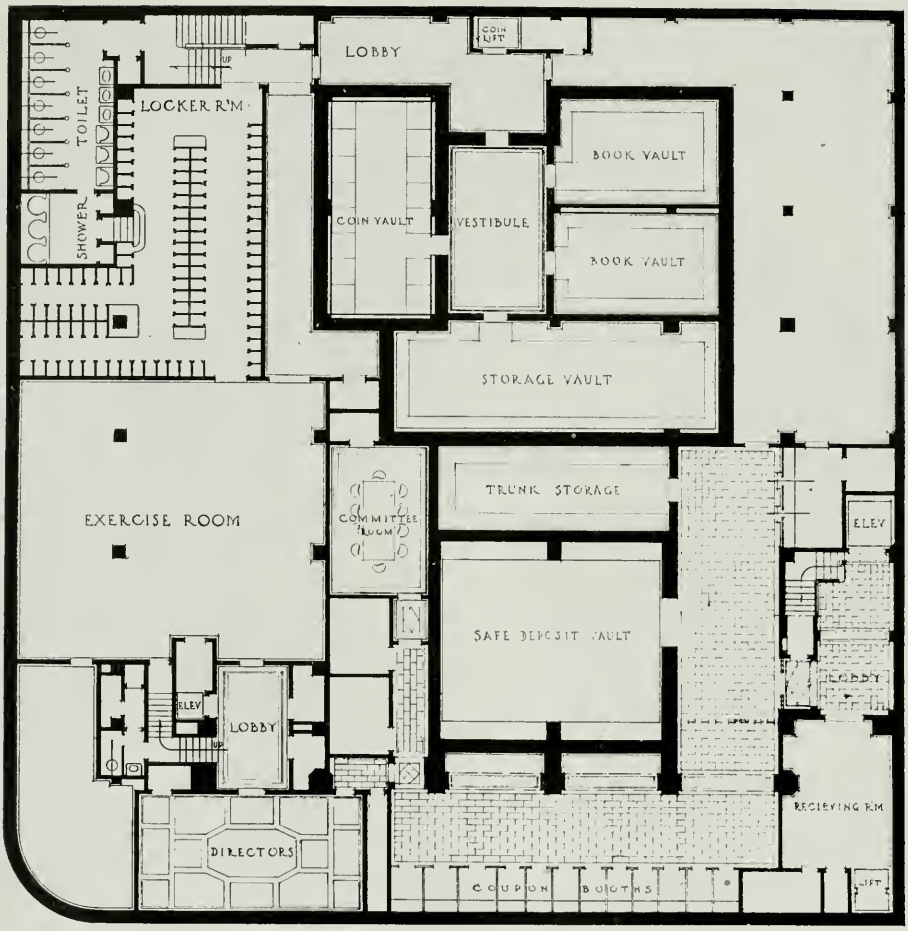
UNITED STATES NATIONAL BANK, PORTLAND, OREGON
A. E. Doyle, Architect

hall is exceedingly successful and a most graceful example of Italian Renaissance, nicely proportioned and in very good taste. On the whole it is a building that any city can be proud of, and Mr. Doyle is to be congratulated upon it.

The United States National Bank

Bank directors, in selecting the design for a new building, want not only an effectively arranged banking room but an exterior that will attractively advertise the wealth and business of the institution as far as the building can be seen. This purpose Mr. Doyle has carried out very well in the United States National Bank building, with its 48-foot colonnade or portico, and richly ornamented Roman frieze, cornice and balustrade. The exterior is of a light pinkish grey terra cotta on a base of pink granite, giving a warm and pleasing tone. The solid bronze of the entrance and vestibule doors and the metal frames to the windows are made thin yet graceful, with the result that there is the maximum amount of light on the interior.

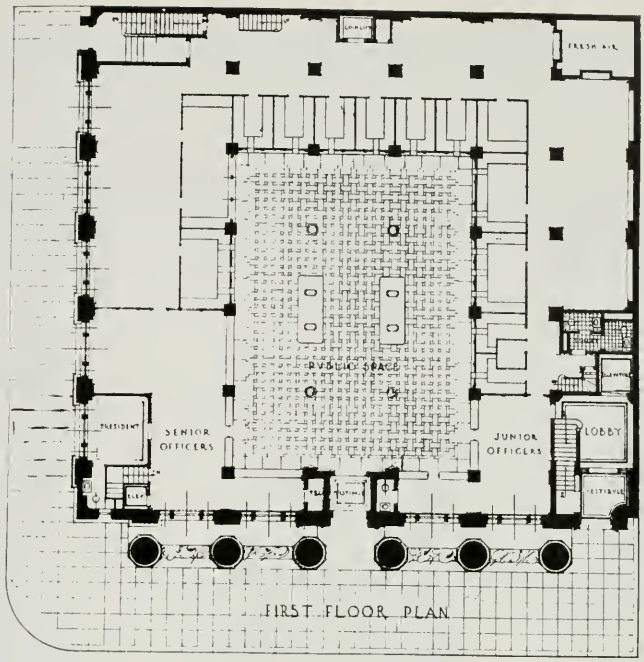
The main banking room is of pleasing proportions, 30 feet high, with a decorated plaster ceiling and a mezzanine floor on three sides. The public space is approximately 42 by 56 feet, unbroken by columns, the bank fixtures being of Hauteville marble, bronze and plate glass. Just enough color has been used on walls and ceiling to give a relief from monotony, the warm yellow tone of the marble floors and banking screen creating an inviting atmosphere. Coins and symbolical motives have been used in the plaster and marble decoration of the interior as well as on the terra cotta and iron of the exterior, in good scale and with appropriateness.

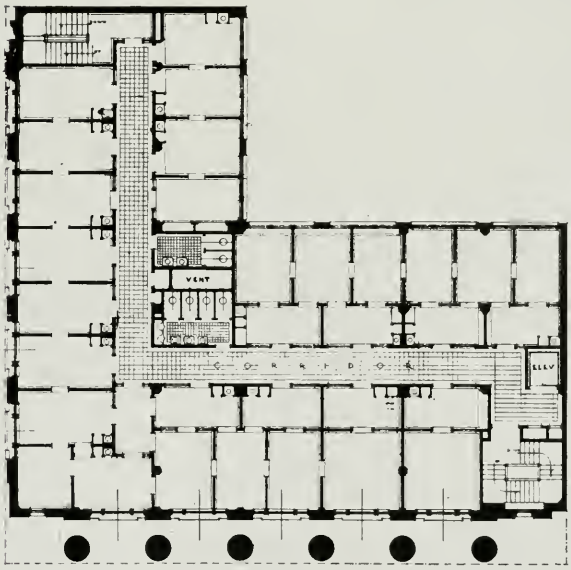


BASEMENT PLAN
U. S. NATIONAL BANK, PORTLAND
A. E. Doyle, Architect

A stimulating feature of this bank, which has several hundred employees, is the large space devoted to gymnasium, recreation and rest rooms for both men and women employees in the basement and mezzanine floors. The good ventilation on the mezzanine floor and in the working spaces is another noticeable fact, showing that the health and efficiency of the employees are well taken care of. No dull or nodding bookkeepers or stenographers are noticeable in this building.

The large vaults in the basement are of heavily reinforced concrete built in the form of an island in the center of the building and opening from a common vestibule. The latest improved devices and equipment for banking operation have been used. The main banking room is heated by air brought in from the outside which passes through an air washer and the supply register into the banking room. The foul air is drawn off by an exhaust fan and blown outdoors. The general lighting of the banking room is exceptionally good, and for special working illumination X-ray





PLANS, U. S. NATIONAL BANK
A. E. DOYLE, ARCHITECT

INTERIOR—U. S. NATIONAL BANK
A. E. DOYLE, ARCHITECT

RESIDENCE OF E. J. DE HART, HOOD RIVER, ORE.
A. E. Doyle, Architect

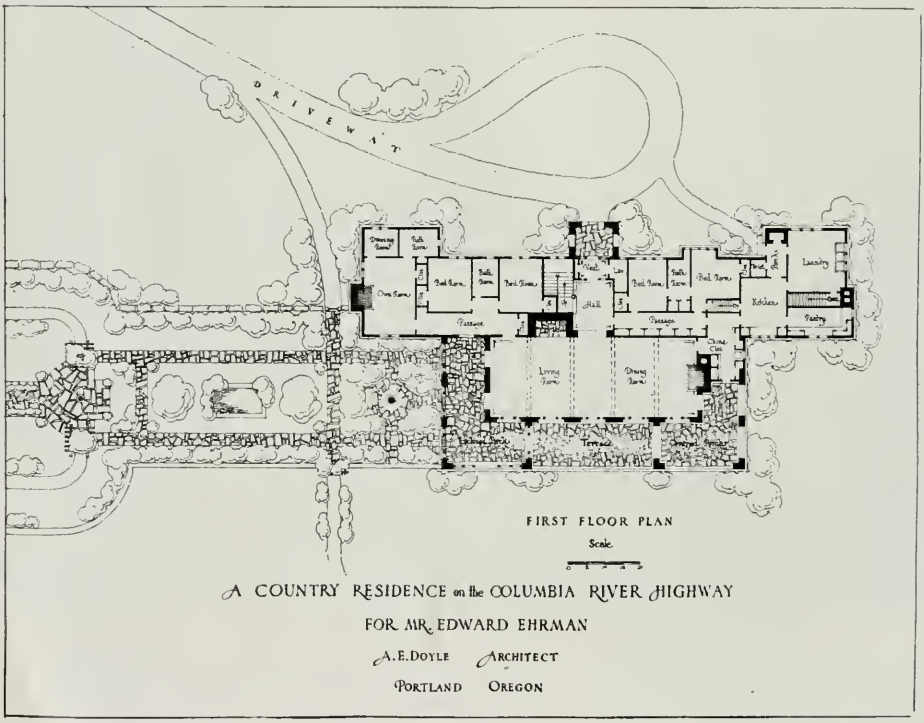
reflectors have been used in all tellers' cages and over the bookkeepers' desk.

As three upper floors for office purposes were required by the client, some criticism has been made of the fact that Mr. Doyle ran his colonnade up the full four floor height, thus making the most of his opportunity on the exterior. To my mind this is not nearly so severe an offense against good architecture as the misplaced proportions and lack of definite conception found in most of the bank designs on this coast. The building compares well with such prototypes as, for instance, the old Knickerbocker Trust Company, on Fifth avenue in New York City.

The Benson Hotel

Of somewhat different style and treatment this 13-story hotel building strikes one as exceedingly good architecture. It is evidently largely inspired, both inside and out, from the famous Blackstone in Chicago. Limited to a quarter of a small Portland block, the lot being only 100 feet square, the architect was confronted with a difficult problem in getting adequate open spaces and vistas on such a small area. However, every room is well lighted and should be so even after the adjoining lots are built up to an equal height. Good materials have been used throughout, the exterior of red brick trimmed with green terra cotta and a green terra cotta roof, presenting an attractive and rich effect. The architect was engaged to select all furnishings and the rooms and lounges therefore present a most harmonious and restful view. Would that more hotels were inspired to employ a man of the good taste of Mr. Doyle in selecting their furnishings!

SUMMER RESIDENCE OF EDWARD EHRMAN, ESQ., COLUMBIA HIGHWAY
A. E. Doyle, Architect



Some Interesting Large Business Structures

While there is not room here to list all the business buildings of very considerable size entrusted to Mr. Doyle to design in recent years, attention should be called to some of the most notable.

The Northwestern National Bank building is principally a 15-story office structure, 50 by 200 feet, the bank occupying the first and mezzanine floors. It is a fire-proof building of brick and terra cotta with good light in practically all the offices, four-fifths of the rooms being outside rooms. The exterior ornament, cornices and detail are of good classic design, though perhaps not so interesting or restrained as in some other of Mr. Doyle's work.

The Meier & Frank Department Store is a 12-story building of white terra cotta covering three-quarters of a block. As Mr. Doyle says, "It is a big dry goods box punched full of holes for light and it looks like it." The building is interesting inside because of its simple open arrangement; it has all the labor-saving utilities that go with the modern department store, including 19 elevators, 7 escalators, 6 spiral chutes and thousands of feet of mechanical belt conveyors.

The Lipman-Wolfe & Company Department Store is a ten-story building of cream terra cotta, occupying the half block adjoining the Meier & Frank building. It is more attractive and better in design both inside and out.

The Pittock Block is an eight-story office building covering a whole block 200 feet square, the building being U-shaped in form above the second floor, around a court opening to the south. It is of grey brick with terra cotta trim. In a deep sub-basement is the central heating plant of the Northwestern Electric Company.

Other office buildings of merit are the twelve-story Selling building and the eight-story Morgan building, the latter specially equipped for doctors and dentists.

EDWARD EHRMAN RESIDENCE, COLUMBIA HIGHWAY
A. E. Doyle, Architect

EDWARD EHRMAN RESIDENCE DETAILS
A. E. Doyle, Architect

Of the industrial buildings designed by Mr. Doyle probably the most interesting are the Ford Service building and the warehouse for Meier & Frank.

The above form the principal buildings of a business and public nature. There are many small things designed by Mr. Doyle of architectural merit of which no photographs were available, including a number of banks, school buildings and houses scattered about the states of Oregon and Washington.

Mr. Doyle's clients say of him that they admired his ability as an architect first and were surprised later to discover his great ability as a good business man, careful of his clients' interests and appreciative of the necessity for respecting the limits of money available for the work in hand. For this directness and business ability he has the respect of the business men everywhere and for his wide civic interest has proved himself an unusually good citizen. He is chairman of many important civic committees, a member of the Portland City Planning Commission, largely responsible for much of the enthusiasm of the Portland Art Association, a useful member of the Chamber of Commerce committees and unusually generous of his time for civic improvement work for a man of so many large responsibilities. On the whole Mr. Doyle is a man of whom both the community and the profession have good reason to be proud.

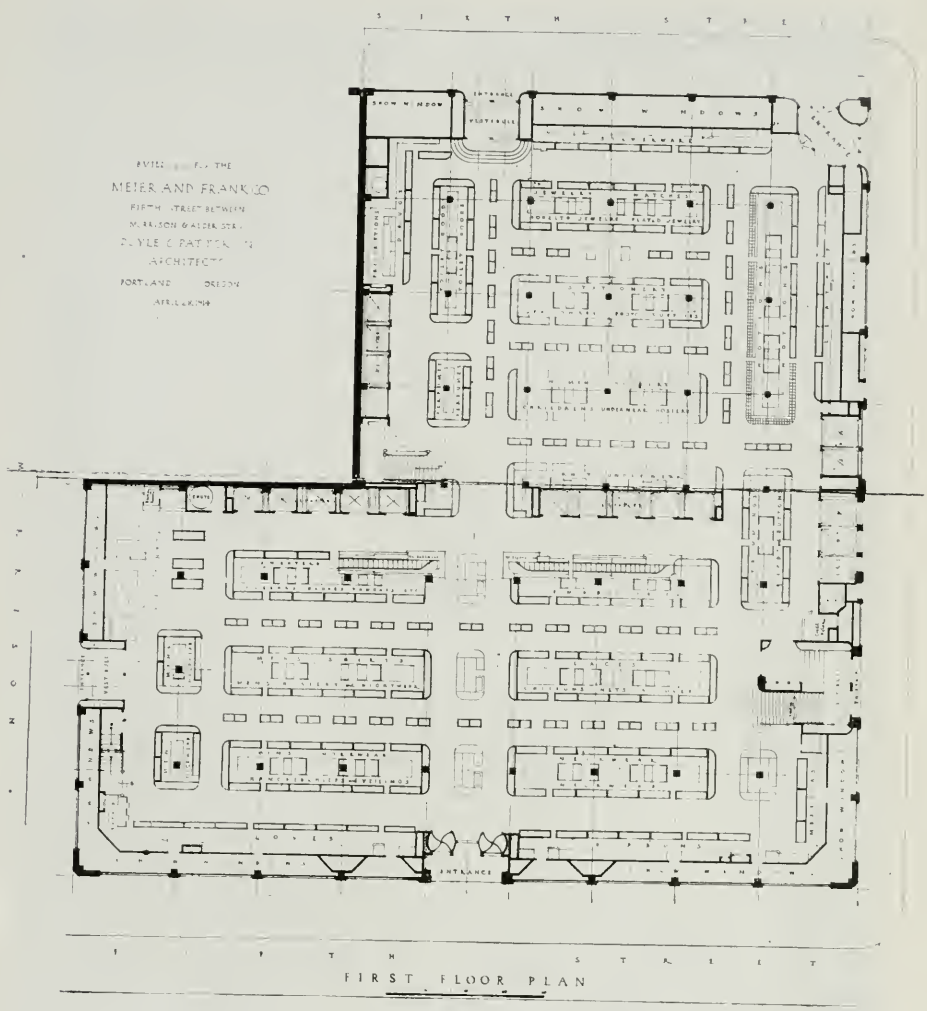
Portfolio of Buildings

Designed by

A. E. Doyle

Architect
of
Portland, Oregon

MEIER & FRANK DEPARTMENT STORE, PORTLAND
A. E. DOYLE. ARCHITECT



PLAN, MEIER & FRANK DEPARTMENT STORE
DOYLE & PATTERSON, ARCHITECTS

SELLING BUILDING, PORTLAND
A. E. DOYLE, ARCHITECT

LIPPMAN & WOLFE DEPARTMENT STORE, PORTLAND
A. E. DOYLE, ARCHITECT

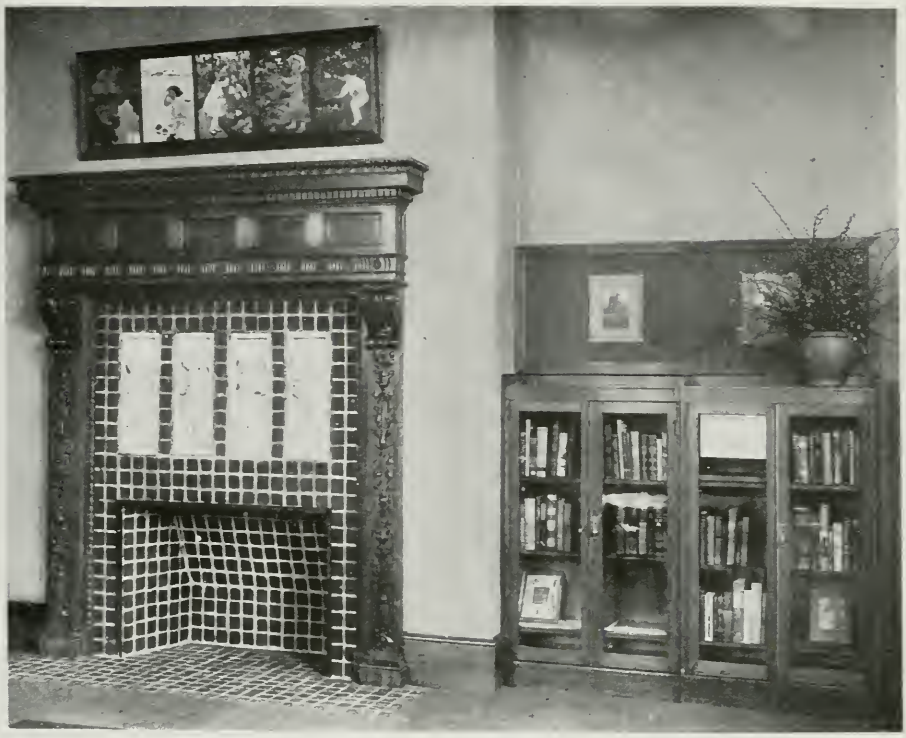
NORTH WESTERN NATIONAL BANK BUILDING, PORTLAND, OREGON. A. E. DOYLE, ARCHITECT

THE MORGAN BUILDING, PORTLAND
A. E. DOYLE, ARCHITECT

ENTRANCE, NORTH WESTERN NATIONAL BANK BUILDING
PORTLAND, OREGON. A. E. DOYLE, ARCHITECT

ENTRANCE, U. S. NATIONAL BANK, PORTLAND
A. E. DOYLE, ARCHITECT

NORTH WESTERN NATIONAL BANK BUILDING,
PORTLAND, OREGON. A. E. DOYLE, ARCHITECT



FIREPLACE, CHILDREN'S ROOM, EAST SIDE BRANCH LIBRARY
A. E. Doyle, Architect

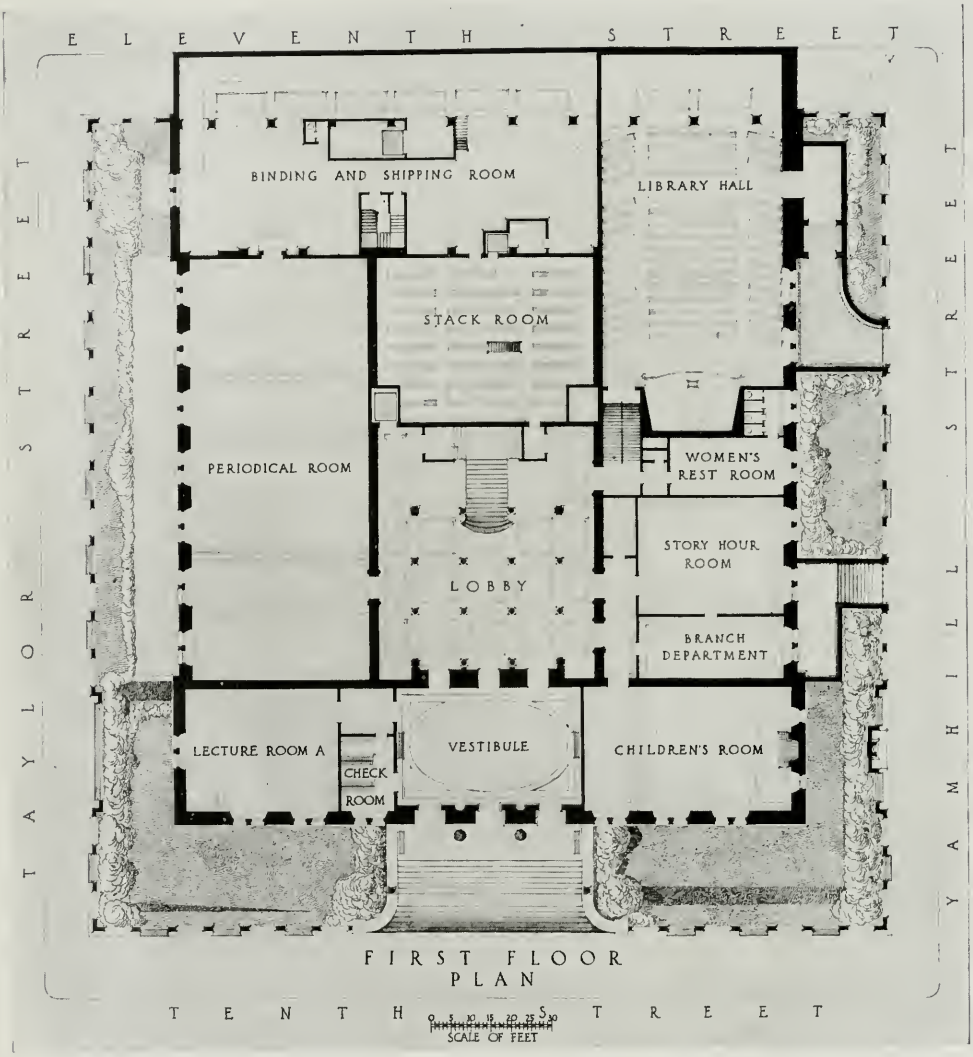
STONE CARVING IN BALUSTRADE,
CENTRAL LIBRARY, PORTLAND
A. E. Doyle, Architect

EAST SIDE BRANCH LIBRARY, PORTLAND, OREGON
A. E. DOYLE, ARCHITECT

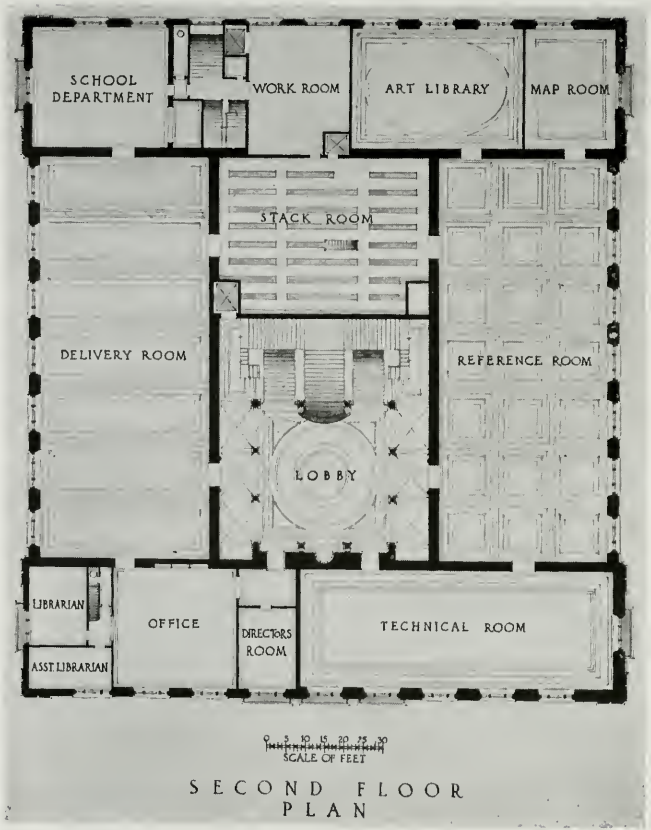
EASTSIDE BRANCH LIBRARY—SIDE VIEW
A. E. DOYLE, ARCHITECT

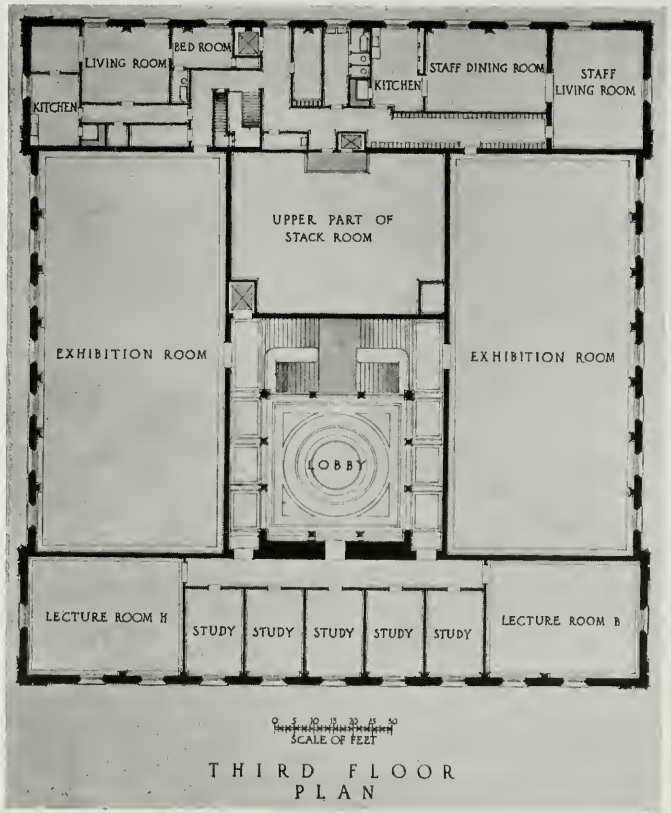
CENTRAL PUBLIC LIBRARY
A. E. DOYLE, ARCHITECT

ENTRANCE DETAIL, CENTRAL LIBRARY, PORTLAND
A. E. DOYLE, ARCHITECT



PLAN, CENTRAL PUBLIC LIBRARY
A. E. DOYLE, ARCHITECT





SECOND AND THIRD FLOOR PLANS
CENTRAL LIBRARY, PORTLAND
A. E. DOYLE, ARCHITECT

CENTRAL LIBRARY, PORTLAND

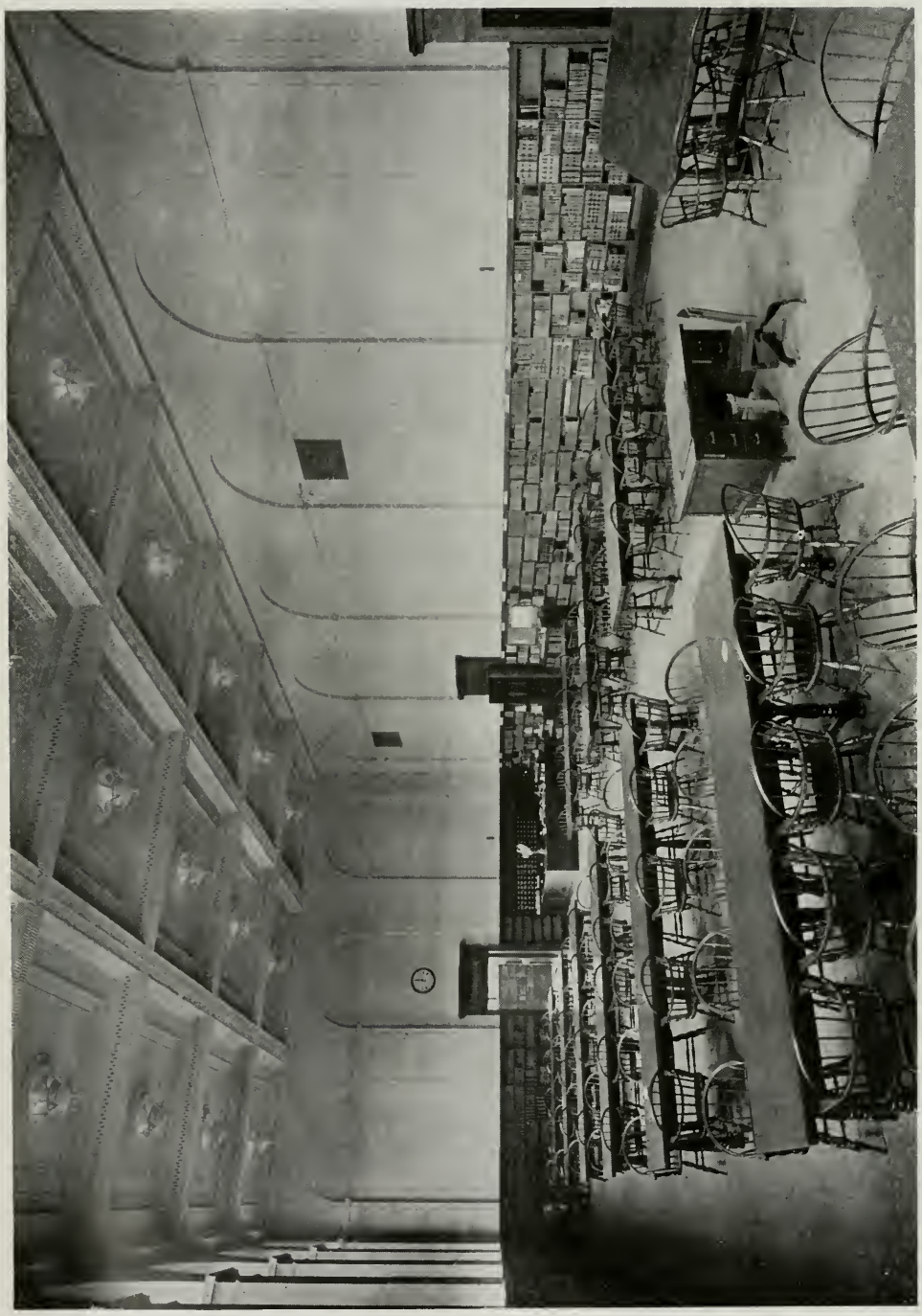
A. E. DOYLE, ARCHITECT

SECOND FLOOR VESTIBULE, CENTRAL LIBRARY
A. E. Doyle, Architect

SECOND FLOOR HALL, CENTRAL PUBLIC LIBRARY

A. E. Doyle, Architect

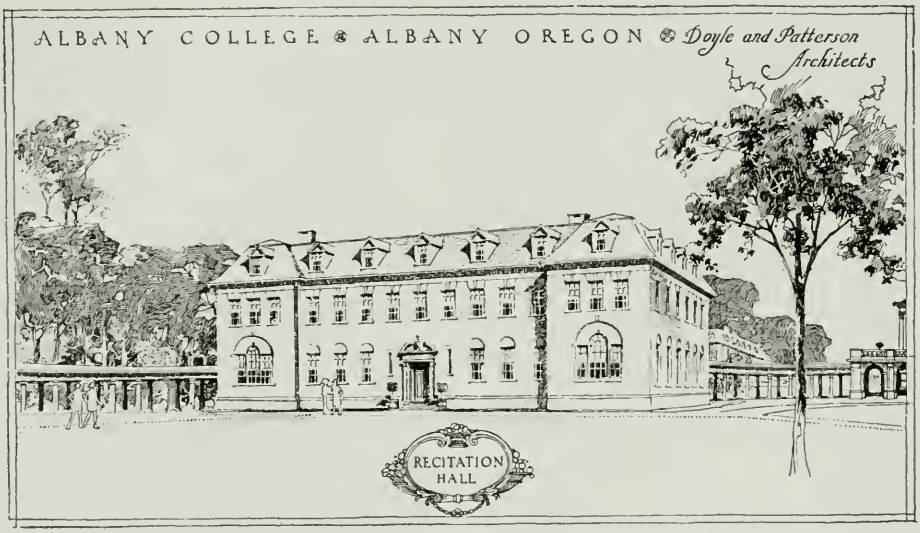
FOUNTAIN AND SEATS, CENTRAL PUBLIC LIBRARY
A. E. Doyle, Architect

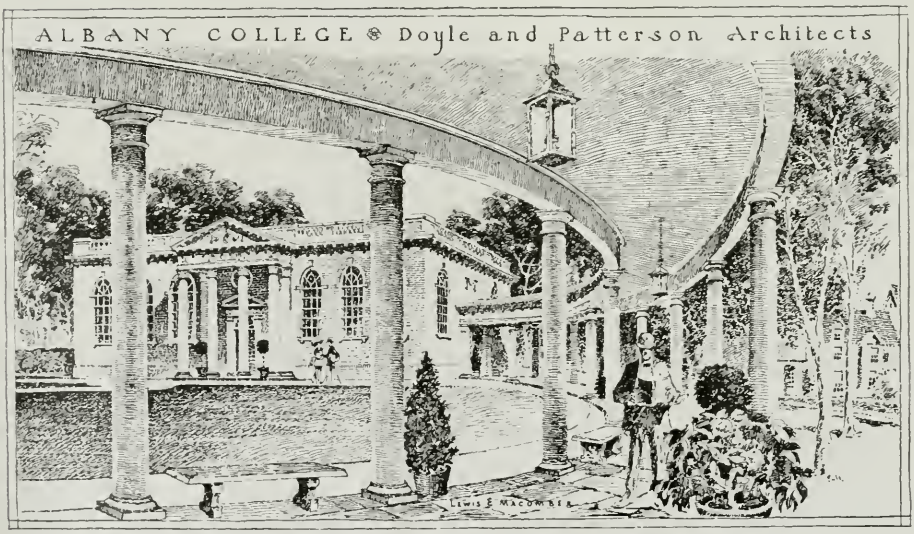


REFERENCE ROOM, CENTRAL LIBRARY, PORTLAND, ORE.
A. E. DOYLE, ARCHITECT

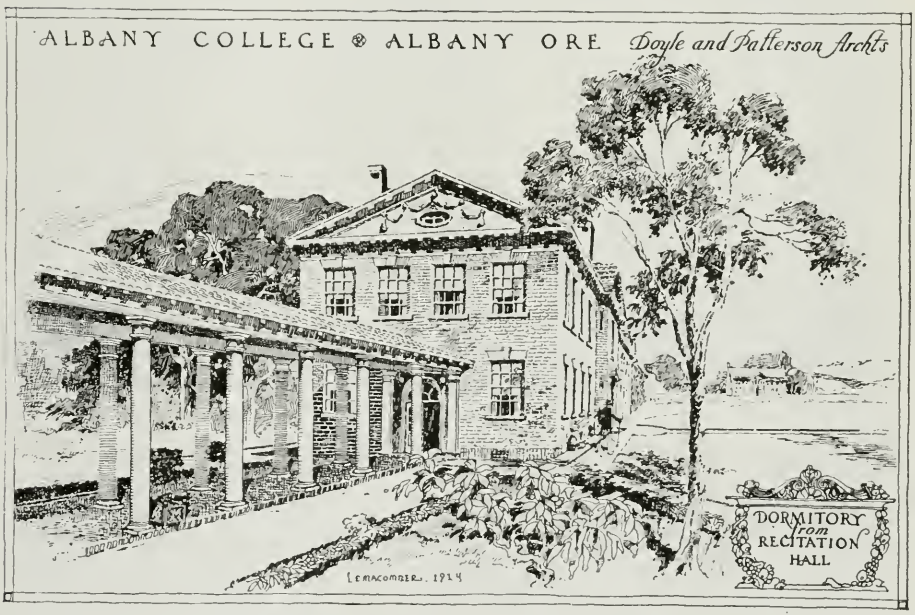
FORD SERVICE PLANT, PORTLAND
A. E. Doyle, Architect

WAREHOUSE FOR MEIER & FRANK, PORTLAND
A. E. Doyle, Architect





SKETCHES FOR ALBANY COLLEGE, ALBANY, OREGON.
Doyle & Patterson, Architects



SKETCHES FOR ALBANY COLLEGE, ALBANY, OREGON
Doyle & Patterson, Architects

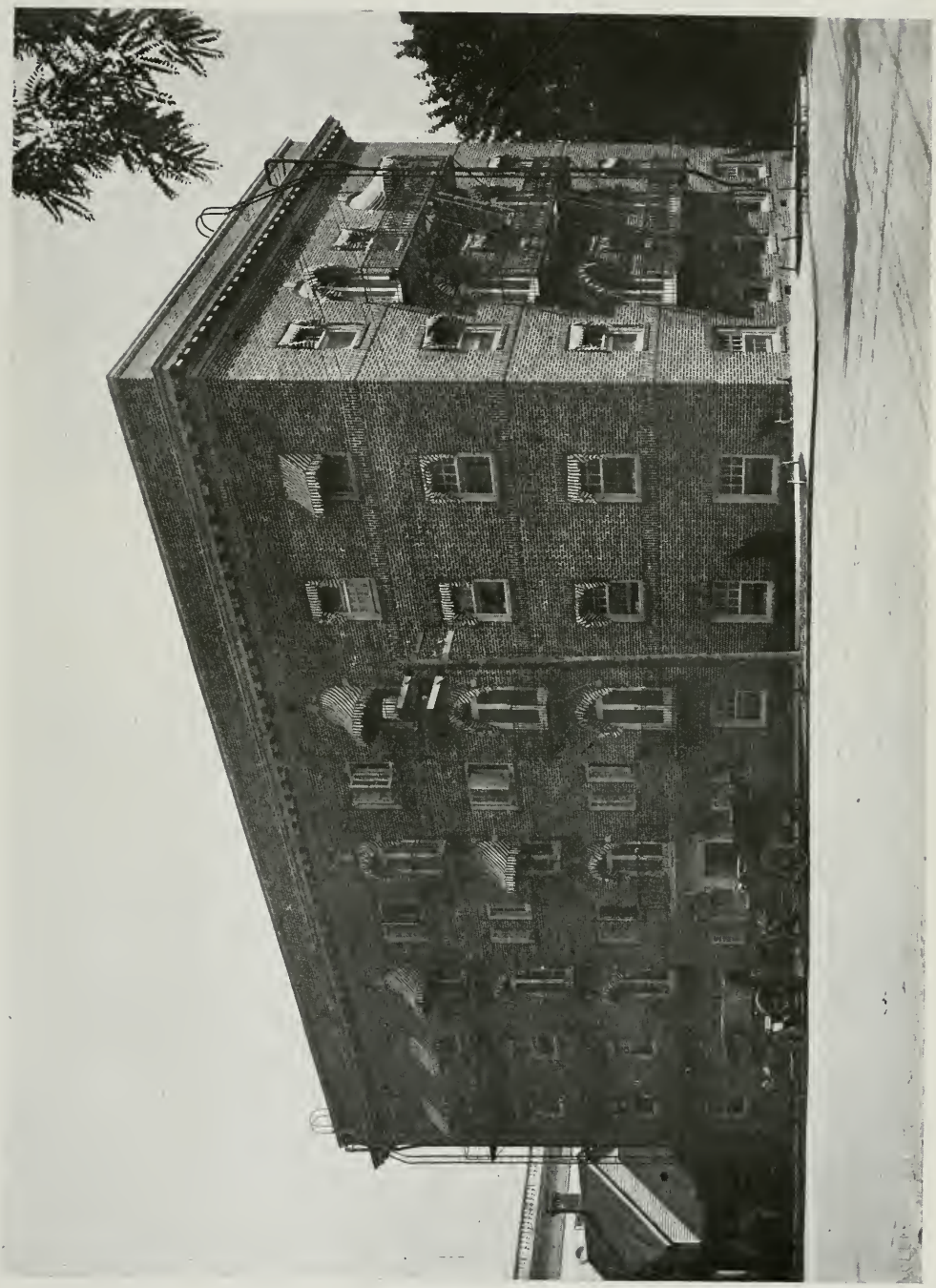
BENSON HOTEL, PORTLAND
A. E. DOYLE, ARCHITECT

LOBBY BENSON HOTEL
A. E. Doyle, Architect

PITTOCK BLOCK, PORTLAND, OREGON
A. E. Doyle, Architect

THE ABE MEIER HOUSE, PORTLAND, OREGON (ALTERATIONS.)
A. E. Doyle, Architect

INTERIOR, THE ABE MEIER HOUSE, PORTLAND, OREGON
A. E. Doyle, Architect



CROMWELL APARTMENTS, PORTLAND, OREGON
A. E. DOYLE, ARCHITECT

SKETCH HOUSE FOR MR. J. G. EDWARDS, PORTLAND
A. E. Doyle, Architect

OREGON STATE NORMAL SCHOOL, MONMOUTH, ORE.
A. E. Doyle, Architect

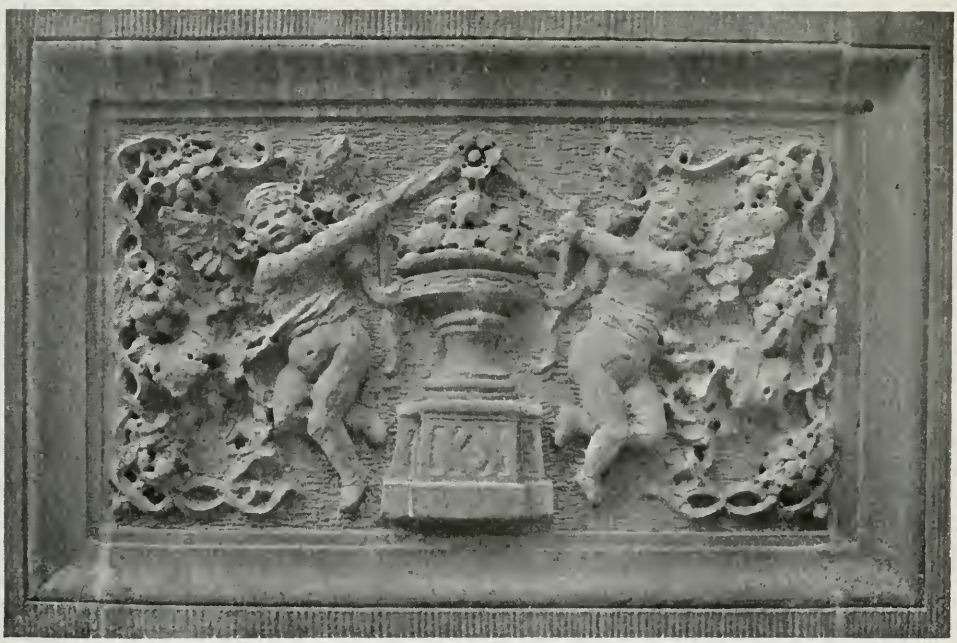
Do Architects Practice Reciprocity?

WHEN, during the course of a series of interesting impromptu remarks, Mr. D. Knickerbocker Boyd, at the last convention of the Institute, stated that architects owed a reciprocal obligation to other societies, he struck the nail squarely on the head, says the American Architect.

Mr. Boyd directed attention to the fact that various departments of the government and many organizations throughout the country are performing valuable services to architects by issuing publications of great interest to their profession. He very pertinently asks, what can architects do to reciprocate this obligation?

If it is claimed that architects are affiliated with many of these organizations and are, therefore, indirectly participating in this work, it may be bluntly stated that such a statement is not fact. But if it is assumed that architects are indirectly co-operating with other societies, is it not pertinent to inquire why they are not through their own organization rendering in part a service that they find so valuable when given by others?

If the Institute, either through its Board of Directors or its State Chapters, fails to give publicity to discussions and investigations of problems that are of vital interest to other professions, may it not be asked if they are not neglecting a most important service? To be sure, we have at each convention many carefully prepared reports, most of them of a valuable nature. What becomes of these aside from the printing in the Journal? Are they sent to allied societies, are they circulated among the architectural press and that of the arts and crafts allied to architecture? It is easy to recall many reports during the past few years that, if widely distributed, would have had far-reaching influence in acquainting the general public as to just what the practice of architecture represents.



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A. E. Doyle, Architect

Echoes of the Nashville Convention

By OCTAVIUS MORGAN, Architect, Los Angeles

THE fifty-second annual convention of the American Institute of Architects was held at Nashville, Tennessee, April 30th, May 1st, 2nd and 3rd, 1919. Meetings were held in the Hall of Representatives of the Tennessee capitol. This is a building in which the State of Tennessee takes great pride. They do not merely honor the architect but also the contractor. Mr. Strickland was the architect, and Mr. Thomas Morgan, the contractor, and in appreciation of his services they have a handsome tablet in the corridor of the building.

Considering the times, there was a very fair representation of delegates, about 150 being present. In addition there were many visiting architects from the Southern states, making all told about 200 present at each meeting. The Pacific Coast was represented by six members; two from Seattle, Mr. Russell and Mr. Wilcox; one from Portland, Mr. Lawrence; two from San Francisco, Mr. Faville and Mr. Schnaittacher; one from Los Angeles, Mr. Morgan.

Following the convention being called to order, the president presiding, a welcome address was made by His Honor, William Gupton, mayor of Nashville. The first day was taken up by the president's address, the reports of the treasurer, board of directors, and committee. Sessions were held in the forenoon, in the afternoon, and in the evening, during the whole convention.

President Kimball's address was to the point and up-to-date. This so-called "post-war" programme took a large part of the time. The architects seemed to think they had not made good, and something should be done for them to hold their end up and make themselves felt.

One of the most interesting talks was by Mr. Keeble, an attorney of Nashville. He dwelt on the responsibility of the professional man in a very illuminating speech, and called forth a great deal of enthusiasm. This took up a full evening.

Wednesday afternoon we adjourned, going to the Parthenon in Centennial Park to an exhibition of portraits and art work, and a reception by the ladies of Nashville.

Friday, after the morning session, we took automobiles, had an extensive drive through the country, arriving at "The Hermitage," the home of Andrew Jackson, which with the historical treasures was looked over and thoroughly enjoyed. We then adjourned to the Park to enjoy a southern barbecue, which we all know by reputation. After the feast we continued our drive, landing back in Nashville about seven o'clock. The country is beautiful, rolling hills heavily timbered, all so green, which after my long trip through Texas looked doubly beautiful.

The new officers elected are: Mr. Thomas Kimball, president; Mr. Charles A. Favrot, of New Orleans, first vice-president; Mr. Clarence C. Zantzinger, second vice-president; Mr. William Stanley Parker, re-elected secretary; Mr. D. Everett Waid, treasurer.

The new directors for three years are—Mr. Edwin H. Hewitt, of Minneapolis; Mr. William B. Ittner, of St. Louis; Mr. Henry H. Kendall, of Boston.

The list of fellows—Mr. Ellison P. Bissell, Philadelphia; Mr. N. Max Dunning, Chicago; Mr. William Emerson, New York City; Mr. Robert D. Farquhar, Los Angeles; Mr. Walter H. Kilham, Boston; Mr. Joseph

C. Llewellyn, Chicago; Mr. Henry McGoodwin, Philadelphia; Mr. W. S. Richardson, New York City.

Honorary corresponding member—M. Jean Paul Alaux, Paris, France.

Total membership of the Institute at this time is—

Fellows	292
Members	1089
Honorary Members	83
Corresponding Members	35
Total	1499

The Institute now seems to be almost a unit as to the advisability and wisdom of a system of qualification and registration of architects, feeling that the architect's power and position can only be insured by proper education and qualification in the things that comprise architectural services. Education is now so accessible that it is within the reach of all who desire it, and the respect of the profession can only be attained by its members being educated, qualified men.

The post-war position of the architect: The consensus of opinion was that the architect should in some way conduct his practice so that he would be recognized as a master mind, the master builder in the buildings that he designs and erects, and he should have control of all entering into said work; that he should increase his power by controlling the entire construction of the building, and be recognized as "it"; that his influence is weakened with the owner and the contractor by constant reference to experts, that is, that all these experts should be in his own office and on his own staff; that he is the master-mind which directs them. The tendency has been to drift from this and it has had a tendency to convey the idea that the architect is simply a picture maker, not a practical or business man. (The Government has apparently taken this view.)

Discussions by many of the leading architects have brought out that while the architect is permitted to employ and charge extra for expert services, that in buildings of $300,000 and upwards, with a properly organized office force and staff, his compensation is sufficient to take care of expert services and superintendence, which are a part of his services, without extra charge; that the initial charge should be sufficient to cover all this. By handling his work in this way the owner recognizes the architect as the brains, the directing spirit of the whole building in all of its departments of design and construction, and that he and his staff are the whole thing.

Of course the man with a small practice is up against it, and must get expert services on the outside, but he would be wise to steer clear of contracting firms for free expert services.

During the session we had three meetings a day, morning, afternoon and night. They were pretty generally attended.

Thursday afternoon Mr. Russell, of Seattle, read a paper rather in line of the post-war work, advocating that the architect should keep more control of his work, and this could be best done by subdividing the erection of the building into contracts covering the several different trades.

Thursday evening Mr. John P. Lennan, representing the United States Department of Labor, read a very comprehensive paper on the same lines, the segregating of the erection of buildings so that separate contract should be made for every trade, and the employment of union labor to insure good work, efficiency and avoid trouble.

The Design of Steel Structures*

By ALBERT S. SPENCER

THE design of steel structures is a task very often undertaken without a reasonably sufficient knowledge of the principles involved. The principal object to be borne in mind by the structural designer—ignoring artistic and utilitarian requirements—is to evolve a structure which necessitates in its construction a minimum amount and cost of materials, the latter being distributed so that the structure will remain stable under the influence of the applied forces. This, no doubt, is a very elementary statement, yet, nevertheless, the saving that could be legitimately made in many designs by a more rigid attention to this fact, if a test be made, would amply repay the designer for his trouble. The economy is particularly marked where superfluous material is accumulated, as in the case of a multiple-storied building or in a bridge. In such a building any undue excess of material in the upper stories has to be supported by the lower stories, and ultimately by the foundations. In the case of a bridge the excess load acts as a force-moment, and where the span is only limited by the capacity of the constructive material this force-moment may have a serious effect in limiting the span.

The theory of structures embraces the application of mechanical principles to determine the stability and strength of structural units and of the units acting as a complete structure. These principles may be applied mathematically or graphically. The mathematical method is generally the simplest when the structure is rectangular in outline and when the external forces are normal to the exposed surface of the structure, while the graphical method is the simplest for structures having an angular exterior outline or when the external forces are angular to the structure. The principal points to be considered are:

(1) So to arrange the outlines of the structure as to reduce its resistance to wind pressure to a mimimum and at the same time limit the force-moment of the wind.

(2) The superimposed loads, or applied loads, should be kept down to the minimum consistent with safety.

(3) To examine the structure as to its stability and to endeavor to eliminate any possibility of distortion or displacement.

(4) To calculate the magnitude and nature of the stresses in the various units.

(5) To determine the sizes of the units so that each will safely resist the greatest stress that can possibly be set up.

(6) Where the force-moments exist, to distribute the materials in any unit so as to create the maximum economic resistance moment, and also by introducing where possible such units as will enable the whole structure to have the maximum resistance moment.

(7) To take advantage of the variable unit resistance of the constructive materials.

(8) To select such sections and materials as are readily obtainable and are economical in cost.

(9) To arrange the members and the connections in such a way as to allow the direction and centre of action of the resistance force to coincide with that of the applied force.

EXTERNAL FORCES.—Economy is obtained in a building by the adoption of a low roof in preference to a high type—that is, by the use of a flat roof

* Abstract of a paper read before the Concrete Institute.

instead of a ridge roof, particularly if of large span. The economy is more apparent if it is realized that the extra wind force acting on the ridge roof has not only to be resisted by the framework of the roof itself, but also by the superstructure and the foundations.

A very economical and serviceable type of roof which was recently provisionally patented is a combination of the flat and ridge types, in which the ridged portion or portions are limited to the amount necessary for the natural lighting of the interior of the building. By the adoption of the suspension principle in the arrangement of the framework this special type of roof has many advantages where very large areas are required to be roofed, particularly if the supporting stanchions are to be kept to a minimum in number so as to not interfere induly with the manufacturing process.

Force-Moments.—Reverting to the example comparing a flat type roof with a ridge roof as regards the comparative resistance to wind force, the centre of action of the wind force acting on the flat type roof is much nearer the ground than is that for the ridge roof; consequently, whether or not the ground level is coincident with the fulcrum round which the wind force acts, the moment of the wind force is certain to be reduced thereby, and as a reduction in the external force-moment, leads to a corresponding reduction in the required resistance moment of the building, there is in consequence a saving in the material required to give the necessary stability.

Superimposed Loads.—By a too rigid attitude in the use of conventional allowances, or perhaps more particularly as the result of compulsory adherence to by-laws, we are often reluctantly compelled to misuse our constructive materials, and thus violate one of the principles of the theory of structures. Under the present restrictions, however, advantage may be gained by calculating all loads on the lean side rather than on the full side, a procedure always followed by competitive designers who wish to survive as such.

Stability.—Although there are many excellent treatises which deal with the theory of structures, too much attention is given to the application of the theory to the stability of structural units without sufficient consideration being given to the stability of the whole structure. A similar deficiency is noticeable in the treatment of this subject at our technical colleges. The result of this is discernible in present-day drawing-office practice, where many designers completely ignore the necessity for such stability calculations.

Determination of Sections.—The proportions and properties of the various units must be such that the material is only stressed within safe limits. The proportioning of parts subjected to simple stresses is very elementary and need not be considered here, but some remarks may be made with regard to where compound stresses exist in a unit, such as occurs, for instance, in struts. Units subject to bending stresses should have a modulus of section as large as possible relative to the area, and the resistance arm should be sufficiently large to reduce deflection to within safe limits. Struts, particularly if of great length relative to width, and consequently subject to flexural stresses in addition to compressive stress, should have the radius of gyration as large as possible relative to the area. Where sudden changes of stress occur the material should not be varied in the same degree, particularly if the material is of a granular nature, and for the same reason; also in cases where the nature of the stress varies intermittently a higher margin of safety should be allowed.

Resistance Moments.—Where structural members are subject to flexural stresses economy may be obtained by distributing the material so as to produce the maximum modulus of section or radius of gyration (according to the utility of the member) relative to a given area. This economy is widely

recognized; but taking, for example, the list of standard joist sections, it can be easily demonstrated that the compilers have not taken full advantage of this principle of economy in the use of materials. Now the basis of measurement of the comparative efficiency should take into consideration the area—or weight—resistant lever arm or depth, and the modulus section—that is to say, maximum efficiency will be attained when all the resistant factors are a maximum for any given sectional area, after due allowance has been made for limits of production.

A similar criticism may be applied to the inefficiency of our joist sections when used as struts. This has been recognized, probably, by the originator of the broad-flange beam; yet, although the latter type of beam has been in existence for many years, its use has not been encouraged.

It is very desirable that a more efficient range of joist sections should be obtainable, as under the present circumstances we are making a costly misuse of material and seriously jeopardizing our position in competing for international trade in structural work.

Unit Stress.—The proper use of materials so as to take advantage of the variable utility of constructive materials is generally understood. By way of illustrating this point reference may be made to reinforce concrete construction, in which a compound material composed of concrete (which is strong in compression and weak in tension) to resist the compressive bending stress, while the tensile bending stress is resisted by the steel reinforcement.

Selection of Sections.—The total number of sections in any given structure, particularly if speed of manufacture is essential, should be kept to a minimum, and theoretical considerations should be subordinated to practical necessity.

In locating the various members of a structure, or part of a structure, their position should be such that the centre of resistant action should coincide, for economic reasons, with the centre of action of the applied force. This principle is often violated for practical purposes—for instance, to simplify the connection in fixing the position of the members of a roof truss. This departure is permissible, but where the effect is considerable, as a force-moment of serious magnitude may be created, due allowance should be made for its resistance. The principle is often violated also in the design of connections by locating the rivets or bolts in such a way that the resultant resistance force does not coincide with the applied force, with a similar result to that hitherto referred to.

Principles of Statics.—A full consideration of the fundamental principles of statics is beyond the possibilities of this paper, but attention may be directed to those which are most often misapplied.

With regard to the variable distribution of stress, there are two theories regarding the exact nature of the variation, the straight-line theory and the parabolic theory, the former being preferred owing to its simplicity, although the latter is probably more correct. The basis of the straight-line theory is that the cross-section of the beam simultaneously acts round two fulcra, one of which is in the plane of the outer compressed fibres and the other in the plane of the steel. The basis of the parabolic theory is that the fulcrum in the compressed half is situated at the centre of action of the area of concrete subject to compression, and not at the upper edge. The resistant lever arm is greater for any given section by the parabolic theory than by the straight-line theory, and as the area of the parabola is greater than the area of a triangle with similar base and height, the total resistance of the compressive area is also greater. It will be noted that the error in the straight-line theory is on the side of safety.

Sir E. Lutyens on Architects and Architecture

SIR EDWIN LUTYENS, the distinguished British architect, was interviewed recently by the Cape Town Times, on subjects which are always vitally interesting to the profession throughout the world. In regard to registration Sir Edwin is quoted as saying:

"Registration for architects in Cape Town would assuredly toll their knell. They are in no way mobilized," he said, "and are professionally little more than Irish peasants. The Victorian Age and the Ruskin Glossary have destroyed practically all tradition.

"The position of the engineers who are true to their craft and within their craft eschew sentiment, is, as compared with architects, head and shoulders above them in the practical esteem of public opinion.

"Registration can but, at its best, standardize what in reality is worst in our great art. How many living architects are there today who can couple the Doric order *qua* design? Look around your town and see for yourself. I am tired of the excuse: 'You must remember we are in a new country'—just as tired as one gets in an old one of its inversion.

"In a new country you have a new field. You may not have craftsmen, but fine architecture does not depend upon craftsmanship—indispensable to its greatest achievements—but in herself is beyond them all.

"Look at your Dutch Reformed Church in Adderley street, and do not omit to observe the model of the roof construction, and yet Cape Colony was a bit newer even then; or again, in another branch, the pediment and true architectural intention of Groote Constantia.

"When you have educated your patrons by first being educated yourself, it is they that should insist on registration.

"A present-day architect is little more than a tailor—he has to fit his patron, and they refused to register tailors. Norman Shaw's criticism of the R. I. B. A. was that it was an institute of architects and not of architecture. What would be our position as artists when every builder, decorator, plumber, and undertaker is, as he will have to be, registered as a member of the great art of architecture?

"Great architecture is God-given. Do not let us dam any stream that feeds the flow of its possibilities. Don't let hymns and such-like phraseologies ambush your path to honor."

In answer to the second question Sir Edwin replied that "the only chance for style was that all architects should work together to one end and purpose. That does not mean that we can make no progress or change, but change must come collectively with a fine collegiate endeavor. Engineers beat us as a whole in efficiency and practice. We come in with an apology for 'art,' which profession is knocked out with the first breath of adornment, whereby we capitulate our sincerity. Americans say, 'Our houses are Queen Anne in front and Mary Ann behind!' A taunt so bitterly true that one despairs. You cannot say that of engineers; they are Mary Ann throughout—honorable, but regrettable. The Frenchman says of the Englishman's work that the buildings reminds him of those warning notices displayed in public places with regard to gentlemen's dress—this in reference to our national carelessness when we come to plumbing in the area of fine design. We cannot reject the great laws, derived from patient observation, and the works of masters. The suave and rigid beauty of the great Greek, falling to culmination in the Pantheon in Rome, and again in Chatres in France. The beauties of Chatres and of the Pantheon—or the Parthenon—lie not in the type, but in the matter

expressed. They illustrate the sincerity of thoroughness in consistent achievement, not mere joy rides in approximating prettinesses: spaces embellished with fine articulation and without hesitation or stammer.

"In regard to competitions," said Sir Edwin, "men in full practice are generally those who, rightly or wrongly, have earned a certain modicum of public confidence. These are they who will not compete. A young man sometimes gets his chance through this fluke of a competition, and he as often lives to regret it. The waste of money and endeavor—the hidden client—why not straightway appoint the assessor? The acceptance of competition and its favor depend on the fact that the patrons acting in committee will not take the responsibility of selecting one man to deal with—as each individual member, as a gentleman, would in private life. In America the Institute describes it in their first axiom as unsatisfactory.

"The competition method exists because the older men—secure in their profession—are not generous enough in acclaiming the merit of their younger brothers. Aggrandisement and wealth are held in greater veneration than the future of the art they profess. The whole world is eccentric and requires conversion. Registration won't do this, I assure you. It is not fundamental enough; it is of the same seed as that which produces Bolshevism in labor. Competition among architects is a child born of distrust out of failure. Avoid it if you would have great architecture."

* * *

Making Hotels and Hospitals Quiet Places

THE patent office at Washington recently issued a patent to Mr. Hiram Percy Maxim, inventor of the Maxim silencer, on a noiseless hotel and hospital. The silencing method appears to be new and different from that used in the well-known silencer for guns. A "silencer" is utilized, however, and it is located upon the roof of the building to be made noiseless. The inventor claims it will cool silenced air in the summer, heat it in winter and free it from impurities.

The idea seems to be to modify from a noise standpoint the air entering the rooms of a building, just as the air entering rooms in the winter time is modified from a temperature standpoint, so as to make things comfortably warm. In the new patent hotel and hospital windows would be used for providing light and outlook only, while ventilation would be obtained from intakes much the same as windows, only being located in the blank partition walls.

In explaining the silencer, Mr. Maxim said that it consists of a number of annular compartments which provide a series of circular, endless passages, so that any sound waves entering become multiplied to an extent which brings them above the frequency of audible sound. In addition there is a non-reflective substance intended to quench all small noise vibrations which may be transmitted through the body of the silencing chambers. This construction is about the size of a hogshead, and is put in place on the roof of the building which is to be made noiseless. The silencer will be made of sheet iron.

An improvement claimed for the new arrangement is that whereas windows opening upon most streets cannot avoid admitting dirt, dust and smoke and all manner of impurities along with the air, in the new construction, air admitted through the silencer located upon the roof and fitted with dirt collecting and cleansing devices, would be both pure and noiseless. The patent includes a method of cooling the silencer air in summer as well as heating it in winter. The cool and quiet hotel room in August in the cities, heretofore

a dream of the future, may be an accomplished fact in a year or two if this latest Maxim invention works out in practice.

The new silencer cannot be made use of in existing buildings without serious modifications, because the ventilator ducts in the walls would be difficult to install. The chief use is expected to be in new hotels, hospitals and apartments where the desire is to supply every luxury that modern facilities can furnish. In hospitals in the large cities, where street noises are the source of added suffering and where they cannot be avoided, the new invention is thought to offer great improvements.

* * *

Novel Method of Ventilating School Rooms

AMONG the most vital points in connection with the present-day schoolroom are the system of ventilation and the method by which it is heated. What is said to be an entirely novel method of accomplishing this, and which seems particularly adapted to one-story school houses of several rooms, has been adopted by Messrs. Mullard & Pollard, Fort Worth, Tex., in connection with two school buildings in that place.

This system may be termed the unit classroom system, the heating coils, the fan and plenum chamber being individual in each classroom, located in the "attic" of the cloakrooms (which thus have a low ceiling) and being in charge of the teacher. It is claimed for this system that it saves the cost of long ducts and fresh-air flues, that it is positive and absolute, that there is no disturbance by wind or opening of doors; no loss of momentum in the air currents due to friction and loss of heat due to radiation into ducts and flue walls; space also saved in basement by the absence of a large plenum chamber with fans, washers, heater, etc.

Describing this novel arrangement, it may be stated that the cloakrooms are divided horizontally, so that the height of the ceiling for the wardrobe or clothing is 7 feet. The upper part above the wardrobe is fitted for an individual plant to heat and ventilate that particular classroom. The story height being 13 feet, the portion which may be called the chamber thus has a ceiling 6 feet high.

Looking at this building from the outside, one notices louvres above the cloakroom window, these louvres fronting the air intakes of the chamber. The fresh air is drawn through the louvres and over a series of steam-heat coils by a large electrically driven fan. From the fan the air is forced into the classroom through a diffusing outlet placed about 7 feet 6 inches above the floor line. Foul air is taken out by means of a vent shaft, the opening into which is at the floor and in the cloakroom. The door of the cloakroom is raised 18 inches from floor line so that air may pass freely into cloakroom and to the exhaust register at end thereof. The plenum (pressure in the vent chamber) and natural draft in the flue are depended on for removing foul air. The whole, it is claimed, works noiselessly and satisfactorily. The plants have been in operation in the Fort Worth schools for over a year, and the presence of fan and motor is not suspected by visitors. The control is in the hands of the teachers always. It is said to be economical in first cost and operation. These two buildings are stated to represent the newest school architecture in Texas.

A New Form of Reinforcing Metal for Concrete

M. CHARLES RABUT, a retired inspector of the French bridges and roads, has recently presented a paper to the Academie des Sciences in which he proposes a new form of reinforcement of concrete, which consists in substituting thin flat or curved plates or tubes for the bars and rods now in use.

The present use of three courses about a given point is always superfluous as three tri-orthogonal tensions can be arranged in two perpendicular planes, one of which possesses only one degree of freedom; these two planes should therefore contain the two principal tensions, one of these being the largest of the three under consideration and the two other tangential to a third virtual course, so as to form an ideal reinforcement by means of a system of triple orthogonal surfaces, especially as each of the three courses may be real in some areas and virtual in others, according to the position of the external forces.

In a structure where the three principal forces are tensile it is desirable to combine a course of bars with a plate, each point in the combination being so fixed that the bars are placed in accordance with one of the principal tensions and the plate in accordance with the two others.

The use of plates, as proposed by M. Rabut, is claimed to have the following advantages:

(1) A saving in the labor required to place a given weight of metal in position.

(2) A greater stability before and during the placing of the concrete.

(3) Use of the resistance of the internal forces in the structure in two principal directions instead of only in one as hitherto.

(4) In the case of a plate covered on both sides with concrete, the two faces are independent of the direction of the total tangential force.

(5) In the case of plates covered on only one side, the maximum resistance is obtained by the removal of the neutral axis to a maximum distance, the suppression of the dead zone (i. e., the zone of material between the reinforcement and the surface) which never possesses the same strength as the remainder of the structure, the protection of the concrete from shocks, chemical corrosion and infiltration and the use of the reinforcement as part of the form of shuttering.

(6) The possibility of increasing the adhesion by soldering or welding the bars to the plate in a transverse direction to the tangential forces and to the pressure on the concrete.

(7) The ease with which the use of concrete may be avoided in parts where metal alone will suffice, as in the case of concrete tubes, where the metal acts in accordance with its longitudinal adhesion and transverse tension.

M. Rabut's experience with concrete reinforced with tubes or plates shows:

(a) The forces acting on the tube may be calculated by the ordinary rules.

(b) There is no need to consider the resistance of the filling, as it has, naturally, sufficient resistance to compression. Hence, lean concrete or even sand may be employed.

"Tubed concrete" is specially useful for the economical construction of structures heavily loaded at the end, for the pylons of suspension bridges, aerial hangars or stations, wireless stations or viaducts. This is quite distinct from the use of piles and tubular foundations in which the tube or column carries the load directly.

For structures with simple curves the reinforced bars may usually be replaced by a piece of thin sheet iron which is filled with concrete.

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A. E. Doyle, Architect

Activities and Aims of Engineers' and Draftsmen's Unions in Railroad Service

IN view of the considerable discussion in the past months concerning economic and social phases of the life of engineers and draftsmen and in view of developments along various lines in attempts to better the situation generally, it may be of interest to note that representatives of the International Federation of Engineers' and Draftsmen's Unions, of which the writer was one, were given a hearing at Washington by the Board of Railroad Wages and Working Conditions of the U. S. Railroad Administration, May 12 and 13. In behalf of engineering and architectural employees in all branches of railroad service, both in field and office, a brief was presented to the board and testimony given as to its subject matter. This brief embodied four principal suggestions which we consider to be of prime importance at this particular time of uncertainty, and we requested their adoption by the board in recommendations to the Director General.

One of these was the request that in case the widely rumored reduction of forces should occur (it has already) a system of pro rata furloughs should be instituted, to affect all employees who are classed as permanent, making it possible for many men to tide over emergency periods and for some to use their off time to find permanent location elsewhere. These latter would naturally be taken from the rolls and thus automatically reduce the pro rata lay off for the remainder.

When this method was suggested in our organization for the ship yard draftsmen it was approved by them almost without exception as preferable either to flat discharge or practically enforced acceptance of lower ratings.

A further request was for the establishment of regulatory committees to be composed of the more responsible technical supervisors and representatives of the managing officials. Such committees by applying the schedule and budget principle to work which is to cover somewhat lengthy periods could greatly reduce the tendency of railroad work to go by fits and starts, and be

of great value in breaking the disruptive force of periods of financial depression. The fact that projected railroad construction and the men at work on it usually feel the first effects in times of stringency hardly needs repeating, but the fact of continual danger in breaking up field and office organizations and throwing the men into the market to compete against and under cut those left at work anywhere in the country warrants frequent repetition.

Any abrupt and continued cessation of plan-making by engineers and architects is bound to have results reaching far out into labor and business fields. Mines, factories and endless industries feel the bad effect, and it is this which we hope to minimize through the policies outlined.

The third point of the brief was the creation of office committees, similar to those in many industries, which will put into operation the classification of technical employees and the standardization of their positions, so far as may be accomplished. It was suggested that machinery be adopted for this purpose similar to that instituted by the Macy Board in the private and government ship yards. In this way matters of classification and the adjustment of differences are taken up with supervisors and department heads of managing officials and in rare cases of special difficulty with a regional examiner appointed by the board.

And, finally, there was presented the following salary schedule, which we feel is very moderate:

Minimum Scale	Minimum salaries per month.
Chief draftsman	$300.00
Leading draftsman or squad-man	250.00
Draftsman, Class A	210.00
Draftsman, Class B	175.00
Draftsman, Class C	135.00
Tracer, Class A	125.00
Tracer, Class B	75.00
Assistant engineer (or engineer inspector)	250.00
Assistant inspector, Class A	200.00
Assistant inspector, Class B	150.00
Instrument man	210.00
Rodman, Class A	175.00
Rodman, Class B	150.00
Tapeman, Class A	125.00
Tapeman, Class B	100.00

Regular hours to be 7½ hours on five days of the week and four hours on Saturday, making 41½ hours per week.

No overtime except where absolutely necessary, and at the option of the employees, and time and one-half for all overtime ordered or made necessary.

All traveling and other expenses incurred for railroad business, and also expenses attached to moving headquarters, allowed.

Civil service rules to apply regarding vacation, holiday and sick leaves.

No salaries now in existence to be reduced.

This schedule is slightly lower than that of the Macy Board award to marine draftsmen and it is certainly small when compared with the more than 100 per cent increase in living costs in the last five years.

[Editor's Note.—The above is an abstract of a communication to Engineering and Contracting from the Publicity Committee, Draftsmen's and Designers' Union, Local 14, Chicago. In a circular issued recently by this same union it is stated that the International Federation had over 5,000 members in twenty-five locals. The Chicago local alone had over 700 members. The following is quoted from the circular.]:

"During the last few years, technical engineering organizations have come into existence, having for their announced aims and purposes the economic betterment and welfare of technical men. Our technical journals are publishing many articles bearing on this subject. Even the older purely technical and scientific societies had begun to recognize the great need for concerted economic activity. But the lamentable situation disclosed at the hearing (of March 31, 1919) before the government wage board clearly shows that these types of organization are not so constituted as to attain those announced aims. In our opinion, if an organization is to succeed in being of real benefit to the rank and file, two things are imperative. First, the constitution of such an organization must be so drafted that its control will never fall into the hands of men whose interests are not bound up in its success, for it is obvious that if its officers are men of independent means, there will be no assurance that the success or failure of the organization will be vital to them; second, the organization must have the backing of a large body of organized workers to give it force.

"As to the first requirement, the men in the rank and file who have been able to read the full proceedings before the wage board are firmly convinced that what we most feared has happened to the very organization we expected most from, namely, the control has passed to the higher-ups and is being used more in their interest than ours.

"Wherefore, many of us have, in the quoted words of Mr. Dermody, 'looked into it for ourselves,' with the result that this first requirement is met by the organization of an international Federation of Draftsmen's Unions, whose constitution is so drafted that its control must always remain in the hands of men who depend upon their salaries for a living; and the second requirement is now fulfilled through the affiliation of our union with the American Federation of Labor under a charter giving jurisdiction covering engineering and architectural workers in field and office."

STONE CARVING IN BALUSTRADE, CENTRAL LIBRARY, PORTLAND
A. E. Doyle, Architect

Registration — An Act Without Action

DO our registration laws protect the architect? How often this question is asked and the answer, nine times out of ten, is in the negative. California has long had an act which is intended to protect the licensed architect, but if it does protect there is no evidence on the surface. We have a state board that meets occasionally. It has powers, but one seldom hears of them having been exercised.

The engineering societies have frequently discussed the advisability of licensing their members and probably would do so if they could see where the architects had benefited any by the act. The committee on Public Relations of the San Francisco Association, American Society of Civil Engineers, was asked to take up the matter of registration. Here is its report—terse and to the point:

> There is some advantage to the licensed engineer. But licensing in the Medical and Legal professions has not kept quacks out, so the benefit to the public is doubtful.
>
> There being some doubt as to a certain benefit, *laissez faire*. If licensing were in vogue, with present knowledge, our vote would also be no change.

Mr. Charles Cressey, a member of the firm of Quayle Bros. & Cressey, architects of San Diego, has some pronounced opinions on California's Registration Law and its enforcement, or rather lack of enforcement. To quote:

"Time after time we read eulogistic words from other states and abroad, urging the registration cure-all for all architectural woes, and we possessing both the cure and the woes, ask if it is the shadow or the substance of registration that has staked out its claims in California. There is no great amount of criticism heard, however, upon our Registration Act itself, which though spineless and too tolerant for most of us, does at least give legal title and a defendable right to the name architect.

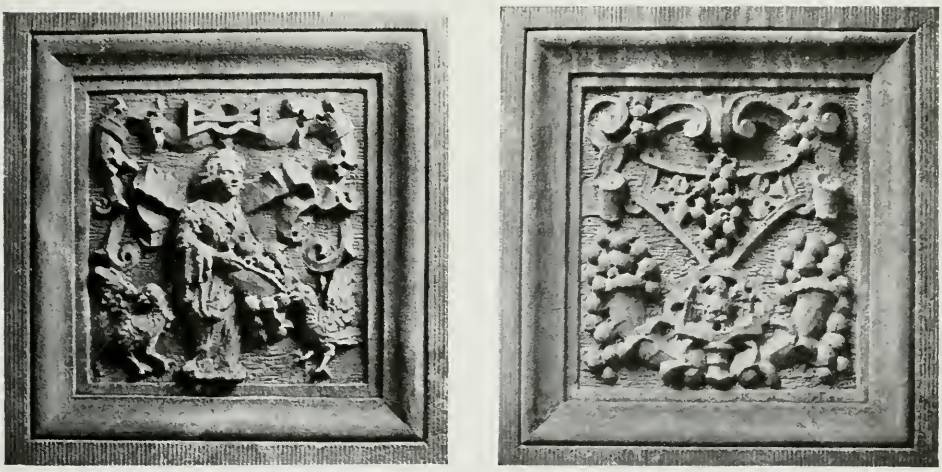
"That right and the lack of action in defending it, is the cause of bitter complaint amongst architects, few of whom within my circle of acquaintance are without cases of personal loss and chagrin caused by unregistered men who care little for law and less for architecture. Accepting the California act for what it is worth, I think I am expressing a general conviction in saying that architects should and could have greater protection than has yet accrued to the profession, if the State Board exercised its powers or showed even moderate aggressiveness against admitted evils.

"It is argued that the duties of the Board are purely administrative and do not include police duty or the collection of evidence. That is a cold, cold, inactive view of an act, which is either protective, or is just a string of worthless words. If the State Board can only proceed against offenders upon formal complaint and definite evidence gathered by outsiders, that point of view is not generally known or accepted, and a service will be done by stating the fact and inviting co-operation of all interested. Too great a stress appears to be given to the letter of this act and too little attention paid to the power of personal influence and leadership.

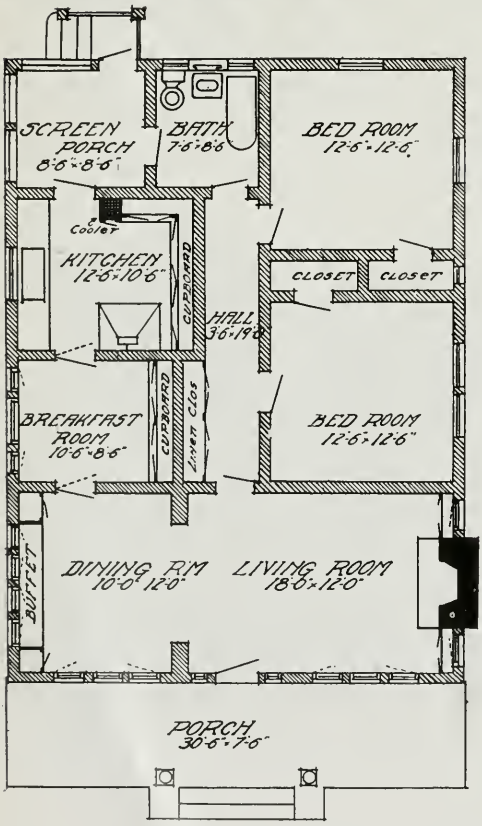
"Members of the State Board are individually respected, each having a record and standing in business life which assures them a hearing on the subject in which they are specialists. So far there has been reluctance to assume this attitude of leadership, and few outside the profession know of their existence as a State Board of Architecture or that they have charge of an act primarily for the protection of the public.

"Most of the departments under state control are doing vital work in educational propaganda, going right to the public with practical reasoning and facts, and that public has never been in so receptive a mood as now. Everything from chicken raising to safety-first ideals, seems to be advised upon by state specialists, excepting only that art of sane and safe building on which public life is so thoroughly dependent. Prove to the public that direct cash loss, mental sluggishness and low production, follows imperfect planning as surely as it follows imperfect feeding—prove that half-bad planning is more dangerous than half-truths in speech—prove that architecture is the primary art of planning—that decoration is a supplemental art, and that this art of planning is the work only of men specially trained beyond the arts of practical building, at the cost of time, untold perseverance and personal sacrifice—prove, too, that a state certificate can be won only by qualification, be lost by misconduct, and is as unpurchasable as the military cross for valor —and we will need to worry but little over incompetent pretenders.

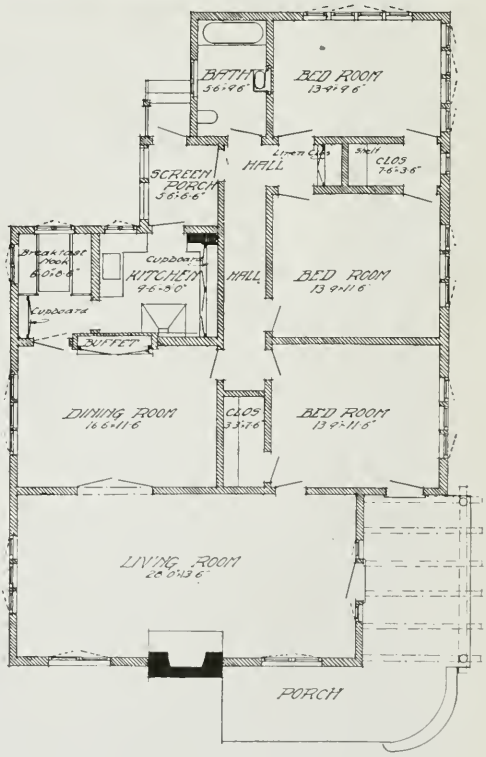
"This educational work is a duty and field in which the standing and authority of the State Board of Architecture is not merely essential but is irreplaceable. Neither the A. I. A., the local chapters, nor the most earnest words of the architectural press, can ever give the tone or reach the ears of such a public, as would the broad-minded efforts of a board acting in the public interest as distinct from the interests of architects. There is in this outline an expression of the new ideal in government—not repression, punishment, or interference with the public in class interest—but helpful, truthful leadership, giving service to the many enterprising men and women, who do or may build wrongly, from simple lack of understanding. If the State Board is to remain a purely examining body, helpless against offenders for want of a more drastic law, then architects are hopeless, indeed."



STONE CARVING IN BALUSTRADE, CENTRAL LIBRARY
A. E. Doyle, Architect



BUNGALOW AND PLAN, LOS ANGELES. DESIGNED BY HENRY L. WILSON, LOS ANGELES.



BUNGALOW
AND PLAN,
LOS ANGELES.
DESIGNED BY
HENRY L. WILSON,
LOS ANGELES.

Expansion of Lumber Exports Dangerous to Home Industries

By HENRY S. GRAVES, Chief of U. S. Forest Service

THE exportation of American lumber on the scale likely to result from the European demand for material will, unless accompanied by provision for regrowth, seriously deplete the supplies needed by home industries and impose hardships on the consuming public here.

The Department of Agriculture has just issued a pamphlet warning wood-using industries, the lumbermen, and all interested in home supplies of forest products or foreign trade in them, that the question of lumber exports can not safely be left to the care of itself. The situation is especially critical with certain of our highest grade woods, such as ash, oak, hickory, yellow poplar, and black walnut, which are the support of important industries such as the furniture, vehicle, and farm implement industries, and with southern yellow pine, of which the main bulk of the supply is approaching exhaustion and which is likely to be exported in large quantities to meet after-the-war demands.

The situation is one of ominous possibilities. Most of the leading industrial nations of the world, whether lightly wooded and dependent upon imports or heavily wooded and exporters, are taking steps to safeguard and develop their timber resources. The United States alone appears to be content to build up a great export trade without considering the ultimate effect upon domestic timber resources and their capacity in the future to supply the home market.

Sound public policy does not, however, necessarily demand the discouragement of exports. The United States, standing second among the countries of the world in forest area and producing more than half of the sawed lumber, should play a more important part in the export trade of the world than it does now. With proper safeguards in the way of maintaining the raw materials, a strong export trade should be encouraged. But the gains which we may make in the markets of the world can be kept only in so far as they are based on a permanent supply of timber. If they are to be based merely on a cut which, as in the case of the old-growth southern pine, will not supply even our own domestic needs for more than the next 10 or 15 years, we shall soon be crowded out of the foreign markets by countries which base their export trade on a continuous self-perpetuating resource.

Before the war we were exporting three and one-half billion board feet of lumber and sawlogs, nearly half of which was southern yellow pine and more than one-fifth hardwoods. This was about 10 per cent of our total cut. It was partly offset by importations—one and one-fifth billion feet of lumber and logs, a billion cords of pulp wood, 895 million shingles, and 565 million lath, imported from Canada; 1,140,000,000 pounds of wood pulp and 600 million pounds of book, news-print, and wrapping papers, imported from Canada and various European countries, and in addition many other articles and products derived from wood. Europe's emergency need for lumber, above its consumption in normal times, is put at about seven billion feet of lumber a year for the near future, on a conservative estimate; and her own forests have been depleted by the war.

Europe, however, needs cheap lumber above all, and our product will not be attractive for the principal needs of reconstruction. Nevertheless, the world situation in lumber offers an undoubted opportunity for a permanent export trade from this country of proportions that would seem to be limited only by our own powers to sustain the production of saw material. The pre-war deficiency in wood which was supplied the nations of western Europe by Russia, the United States, Canada, Sweden, Austria-Hungary, and a few others, amounted to about 15 billion board feet per year, and represented a

value of close to $600,000,000. This deficiency, because of the tendencies toward industrialization, will become greater as time goes on.

The leading countries of Europe must continue to be large importers of timber. In Europe only Russia, Finland, and Sweden can increase their timber exports without lessening their forest capital. Of the other parts of the world still possessing vast timber areas most are lagging in development and their forest resources remain largely inaccessible and do not contain the common soft-woods, the chief stable timber product of international trade.

The relation of our forest supplies to the export problem can not be judged on the basis of the total amount of timber in the country. Regional depletion and the failure of available supplies for American wood-using industries dependent on special classes of material are serious dangers of the relatively near future. Europe will look first to our eastern states for lumber.

Our valuable naval stores industry is in danger, for unless the turpentine industry is placed on a permanent basis, as it is in France, the leadership which the United States possesses because of the abundant supply of long leaf pine timber will soon pass to France. According to recent reports hickory is very scarce. The present heavy calls for ash, oak, and yellow poplar have produced a condition approaching famine at many mills. At the same time the lumber trade journals report that there is an enormous demand for hardwoods in Europe.

There are a great many wood-using concerns that can not point to five years' supply of raw material of which they are certain. They can not contemplate with much satisfaction a policy of exports that will cause foreign competition for raw material tributary to their plants. The American wood-using industries, which give employment to American workmen and to American capital, export annually $130,000,000 worth of products manufactured partly from lumber. This is in excess of the value of the lumber export itself.

Is it a wise policy to attempt to develop extensive markets for hardwood lumber at a time when our forests, as now handled, will be able to produce barely enough for our own industries? Are we not by such a policy helping foreign industries and workmen at the expense of our own? Obviously the answer is to stop the present forest destruction, and to produce by growth enough both for our own needs and for a healthy foreign trade.

The forests supplying the material for export are almost wholly privately owned. There is no effort to secure replacement after cutting. Local exhaustion of the forests is leaving great stretches of land in an unproductive condition, resulting in virtual impoverishment, if not depopulation, of very considerable areas.

Such a situation is unnecessary. It exists because the public is unconscious of the economic danger that is clearly menacing its interests. The public must take cognizance of the dissipation of our public wealth and insist on the use of constructive methods of handling forests instead of destructive exploitation.

The character of the forestry problem is such that results can be secured only through the participation co-operation, and direction of the public in a much more far-reaching degree than has heretofore been undertaken. It will be necessary that the public, through appropriate legal and administrative measures, insist upon adequate forest protection and the use of such methods of cutting as will make possible forest replacement by natural reproduction. At the same time the public must liberally assist the owners in such measures as are necessary to make good forest handling a feasible matter.

Such a policy, coupled with a broad policy of public acquisition of forests —National, State and municipal—would make safe and wise the encouragement in a large way of the export of lumber and other forest products.

THE
Architect and Engineer
INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional.

VOL. LVIII. JULY 1919 No. 1

Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

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THE INSTITUTE CONVENTION

"Confession is good for the soul," is the picturesque way a writer in The Architectural Forum begins his report of the fifty-second annual convention of the American Institute of Architects, held at Nashville, Tenn., in May. It is very evident the convention was needed—if for no other purpose than to provide a means for the release of long accumulated steam. A tally of the convention's net accomplishments would hardly fill half a column, says the Forum, but the relief which the tortured minds of the profession must have felt at its close was immeasurable.

We know of an architect, who, when the vagaries and provocations of a client become unendurable, calls in his stenographer and dictates the most scathing letter that he can conceive. A couple of hours later when the letter, neatly typed, is placed before him for signature he reads it through perhaps twice with a grin of the greatest satisfaction, but, instead of signing it, he a little regretfully, but contentedly withal, tears it into a thousand pieces and drops it into his waste basket. His brain storm is over, the danger line is passed, and he again faces his tasks with a light heart.

To an observer on the side lines, the Nashville convention illustrated the same phenomenon. The worries and cares of the war period were discussed to repletion; the eternal question of education of the young again reared its hydra head, and the varied matters of the Secretary's office and the Institute's publications received due attention, but when all was over the convention had, as usual, magnificently filled its traditional role of safety valve and the delegates returned to their offices cheered by hearty handshakes and greetings, heartened by the inspiring words of Mr. Keeble's address, and refreshed in body and soul by the last day's outing at the beautiful Hermitage.

The dominant subject, as was expected, was the work of the Post-War Committee, whose earnest and self-sacrificing work, as evidenced by

their circular, received the highest commendation.

The other principal topics receiving attention were those relating to education, to competitions, and to the question of a permanent and high salaried Secretary, but the topic which, while occupying a very small amount of time, excited the greatest interest, was perhaps the report of the Committee on Jurisdictional Disputes, presented by Mr. E. J. Russell, its chairman. This was probably the first time that the work of the Institute had touched that of organized labor, and the novelty of the work, as well as its importance, seemed to awaken the sympathy of the convention to an unusual degree.

While the topics above mentioned received in detail the principal attention of the delegates, it was observable that the keynote running through all was the question of improving the profession (not the art) as a whole, and to that end aiding the younger men in their efforts to become worthy practitioners. This departure from the spirit of some previous conventions in which questions of fees, competitions, and by-laws have been preeminent was a pleasant change, perhaps even marking an era, and was probably due in no small measure to the broad and simple humanism of President Kimball's character, as was well instanced by his opening address, which was above all a plea for the brotherhood of professions, unselfishness in practice and a helping hand to the beginner.

NOTES AND COMMENTS

By "THE-MAN-IN-ACTION"

The Draftsmen's Union

There is a difference of opinion among architects and engineers of the country regarding draftsmen's unions, a majority of the architects being emphatically opposed to the movement. Western Architect thinks that in relation to both the unionizing of draftsmen and the counter-stroke of a protective association, it is a case of "A plague on both your houses."

In the status of the draftsman there is no relation between his employment and that of the day laborer other than a stated salary which always has, and rightly, depended on his value to his employer. At no stake of his service is he other than a student seeking to perfect himself in a craft that will enable him to continue as a practitioner when that education is far enough advanced to warrant his assuming its responsibilities. In no other country in the world has the draftsman been paid for this service in its preliminary stages, and in some a premium is paid by him for the opportunity to work under the practicing architect. Fifty years ago the office was the only school, and now that architecture is in the curriculum of most colleges the post-graduate office experience is necessary for a complete education in the profession. From a union standpoint draftsmanship is the antithesis of unionism. The youth who assays the profession of architecture for a livelihood is wasting his time when he lacks not only talent but a firm belief in his ability, and a love for the work that transcends its possible emoluments. Architecture is a profession and never can be classed as a trade; and its votaries upward from the most unskilled that enters an office, are following that profession. Its ethics, its practice, as well as its too meagre returns, both in fame and in fortune, are his.

Architectural Review

Mr. C. Howard Walker, of the Architectural Review, in his monthly resume of articles and plates in the leading architectural magazines, makes some interesting comments on articles in The Architect and Engineer of California (now the Architect and Engineer). He says in the May number:

> The Architect and Engineer of California, February, has plates of Allison & Allison's Union High School, Palo Alto. It is interestingly planned with picturesque masses, well proportioned—an artistically studied solution of utilitarian conditions, in which these conditions are much better fulfilled than in the standardized commonplace types in use throughout the country. The effect

is now somewhat dry, but only requires age to soften it. Mr. Fitzpatrick, in "More Constructive Criticism," says perhaps he is a scold. We would not go as far as that, we think he is only setting up "Aunt Sallys" and shying sticks at them. No two men agree on all subjects but most men agree on some fundamental facts. Why not agree that architecture is utilitarian structure beautified; that for the protection of man the structure is all that is necessary; that the engineer and the contractor are all that are necessary, and in the eyes of many people nothing else is needed. Let it go at that and be content with those conditions as far as they go. But if there be at present, as there always has been, a desire for a plus quantity to be added to the mere filling of physical needs in the lives of men; if beauty, expression and distinction have value; if there bethings now as there always have been, that transcend utility; if it is true today that "man does not live by bread alone," then the architect is rarer than the others, as sculptors and painters are rarer than the makers of bobbins and whitewashers, and being rarer are less intimate with the multitude, not from desire, but from difference.

Mr. Mullgardt writes of a proposed soldiers' memorial for San Francisco. We only desire to suggest one of two things which have occurred to us in reading his paper. His memorial is to contain five principal elements: First a library of war records, second a hall of war illustrations, third an art gallery of war pictures, fourth an assembly hall for war moving pictures, and fifth a hall for war lectures. Why? First, the library will be taken care of in the Congressional Library and sufficiently in public libraries. Second, the same will happen in regard to war illustrations. Fourth, moving pictures will be in every town in the country until people tire of them. Fifth, with war lectures it will be the same. There remains only the war art museum for war paintings, than which there can be conceived nothing which will sooner grow stale. There were three great war painters of the Franco-Prussian war of 1871—Meissonier, De Neuville and Berne-Bellecour. Their works were engraved, photographed and copied. Can Mr. Mullgardt tell us where they now are? Some in private collections, some in Luxembourg. Yet at one time they were collected as war pictures. As a matter of fact, war pictures are illustrations, not masterpieces, and, therefore, the war picture museum seems unnecessary. Also people do not wish to sup on horrors, nor are they interested in topography. We feel that a memorial of this type would duplicate effort and would lose value as time went on.

A School House Architect

Several school houses designed by Mr. William H. Weeks, architect of San Francisco, are illustrated in a recent number of Concrete, which refers to Mr. Weeks as one of the country's foremost school house architects, concluding with this fine tribute:

> Not only in economy and in fire-safeness are his schools worthy of attention, but they are notable also for their beauty of design and simple richness of treatment attained with a material whose quality, in lending itself to the finest architectural uses, is coming to be better understood.

Discussing in this same number the construction of the Watsonville school and other similar structures, Mr. Weeks himself says he finds the monolithic reinforced supporting wall construction more economical than reinforced concrete frame. All exterior and corridor walls are from 12 inches to 8 inches thick, and these fireproof barriers extend from the basement to the ceiling of the upper floor. Corridor floors are of concrete, covered with cork carpet—typical slab and joist construction, a detail of which is shown.

One of the features of the Watsonville school to which the architect directs particular attention is in the ramps, or inclines, which take the place of stairways from the first to the second floor, and from the first floor to the ground line. These ramps are on a slope of two inches to the foot, and are about six feet in width, with concrete balustrade. The surface is covered with cork carpet, so there is little danger of slipping. In the Watsonville school they have proved to be very satisfactory, so much so, that since the erection of the Watsonville school Mr. Weeks is putting the ramps into other buildings in place of stairs. The space taken by the ramps is about double that required by a stairway, and Mr. Weeks says that his own experience shows that a first-class stairway with iron rails, with safety treads, costs about as much as the incline, while on a cubic foot basis the incline cost is about half as much as the stairway, so that the cost of inclines and stairs is about the same, except for the

amount of wall, which must be a greater area. The material used in the incline is cheaper and the labor for building it is less than for stairs.

The Santa Cruz High School is of construction similar to that of the Watsonville school. The cost of the building was 13 cents on the cubic foot basis and $200.00 per pupil.

In connection with cost, Mr. Weeks says:

In comparing the cost of a structure of this kind with the average wood or brick building, this building figures less than the brick structures, where the face of the building is of tapestry or of pressed brick, but would figure about equal with common brick facing, and is 15 per cent more costly than wood. This building, however, and this type of construction is very much better suited to this climate and locality, for the reason that we have had several earthquake shocks, and this type of construction has proved to be almost exempt from any damage when such shocks occur. We have found that brick buildings are not nearly so elastic as the concrete structures, and particularly for school work it appeals more to the people to have the buildings of this type, rather than of brick, which has not proved a safe construction in earthquake districts.

This Architect Believes in Frankness

Mr. James W. Plachek, architect of Berkeley, has a frankness in handling his clients that wins him friends. Mr. Plachek never beats around the bush when asked for an approximate estimate on the cost of a building. If the client wants a $10,000 house for $5,000, Mr. Plachek says it's impossible, and rather than mislead the prospect he tells him the worst to begin with, even though it may cost him a good commission.

The other day a Berkeley woman called Mr. Plachek on the telephone. She wanted an architect to design her new home, which must be a two-story and basement affair with at least ten rooms and a separate garage, the total cost not to exceed $5,000.

"You don't want an architect," said Mr. Plachek, "you want a magician!"

The architect's frankness impressed the woman so favorably that the following day she called at his office and gave him the commission to design her a $5,000 house.

Fresno School Architects Selected

The Fresno Board of Education has announced its selection of architects to design the several new school buildings under the $2,000,000 bond issue recently authorized.

Messrs. Coates and Traver will design the new $750,000 high school in conjunction with the express understanding that Coates and Traver shall do the actual designing and Mr. R. F. Felchin shall attend to the engineering and building work.

The other appointments follow:

Edison school, Mr. E. J. Kump.

John Muir school, Messrs. Glass and Butner.

Longfellow addition, Messrs. Swartz & Swartz.

Washington addition, Mr. E. Mathewson.

Arlington Heights school, Mr. R. B. Hotchkin.

Jackson school, Messrs. Swartz & Swartz.

Jefferson Annex school, Messrs. Glass and Butner.

Lincoln school, Mr. E. Mathewson.

Franklin school, Mr. R. B. Hotchkin.

Kirk addition, Messrs. Coates and Traver.

Santa Barbara Court House Competition

Judgment in the competition for plans for a new court house at Santa Barbara has been deferred on account of the absence of a member of the board of supervisors. The plans were turned in July 3rd, but the jury postponed judging them until a later date. About 15 sets of drawings were submitted by San Francisco, Los Angeles, Santa Barbara and Oakland architects. The building is to cost $420,000 and the jury is to be composed of Mr. J. E. Allison of Los Angeles, Mr. Sylvain Schnaittacher of San Francisco, five members of the board of supervisors, and one outsider to be selected by the supervisors.

Following is a list of architects who registered for the competition. All of them, however, did not submit plans:

SAN FRANCISCO

Chester H. Miller
Mathew O'Brien
W. C. Hays
Jno. Reid, Jr.
E. A. Mathews
A. Lacy Worswick
J. W. Dolliver
Bliss & Faville
Wm. Mooser

DENVER

W. N. Bowman

RIVERSIDE

F. E. Brewster

SAN DIEGO

Thos. C. Kistner
W. A. Livers

BERKELEY

W. L. Woollett
Warren C. Perry

LOS ANGELES

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Henry H. Hewitt
Arthur R. Kelly
Carlton M. Winslow
C. H. Russell
Frank A. Noyes, Jr.
Thos. F. Power
Hudson & Munsell
Arthur G. Lindley

SANTA BARBARA

Roland F. Sauter
Windsor Soule
J. W. Young
Lutah H. Rigg

Electrical Department

Electricity in a Large Office Building

THE Southern Pacific building, now the headquarters of the U. S. Railroad Administration, which is located near the ferry on Market street, San Francisco, is the largest office building west of Chicago. It is said that the building contains floor space sufficiently great to accommodate the entire population of California at one time without crowding. The ground upon which it is built is a part of the city which was reclaimed from the bay and it is necessary to rest the buildings of that district upon piles. Twenty miles of piles are said to have been driven in the construction of the Southern Pacific building.

Aside from its size and the picturesqueness of its construction the building is of special interest from the completeness of its electrical installation. From pneumatic tubes to electrically operated elevators, electricity is used wherever possible. Clocks are electrically operated, the building is provided with an electric fire alarm system, the water for use throughout the building is electrically pumped, and the air electrically renewed.

One of the most interesting features of the building is the lighting system. Probably in no other office building of its size have the excellent results been obtained at a less expense, with no impairment to the effectiveness of illumination. In the first place, of course, spacing and candlepower were very carefully figured to obtain even and adequate distribution of light, but the fixture itself is the factor of particular interest. The Southern Pacific Company has innumerable buildings scattered throughout the West, from stations to warehouses for which it is responsible for the supply of fixtures. This item therefore becomes a very large one in its orders—and owing to the variety of tastes among those who made the choice of these objects, a very troublesome one. In order to simplify the matter and to reduce this element to a standard item, a uniform design was chosen for all Southern Pacific buildings. The advantages of this system are obvious. Not only are shades obtained at the cheapest price and replacements easily cared for, but any lights dismantled need not go into the scrap heap but may be put into the stores for use elsewhere. The system of lighting adopted is the semi-indirect with neat pressed glass bowls which fit appropriately into any surroundings.

The pneumatic tube system is of particular interest. There are many occasions in which correspondence or other papers must be transferred from one office to another, and to save the excessive traveling about the building and the cumbersome nature of any delivery system devised, tubes are provided connecting all the offices. That is to say, tubes connect all offices with the main station where the carriers are redirected and sent to the office marked. By revolving the cap until the indicator points to the required number, any office may be designated as its destination. The receiving station in each case is a conveniently located niche in the wall with a space below for receiving the carriers. The system has proved eminently satisfactory and requires only such attention as the few attendants at the main stations give in redirecting the carriers. An interesting feature was the method of locating the various stoppages which occurred when the system was first installed. The suction element proved too alluring for various of the younger members of the organization who tried its effect on other objects than the regular carriers, with the natural result that the system temporarily ceased operating. With genuine ingenuity, the vacuum cleaner was applied to the balky tube and the various objects abstracted. In some cases, however, the stoppage proved too stubborn and it became necessary to dig in through the wall or floor at the proper spot and open up the tube. After the first few days no difficulty was experienced with the system. The motor which provides the exhaust for the pneumatic tubes is located in the basement and so arranged that it varies with the load. Any object blocking the passage of the tube, that is, mechanically affects the speed of the motor and thus increases the exhaust.

The clocks of the building are also electrically operated and governed by a master clock located on the ground floor. There are twenty-four in all and several time clocks which are connected in this same system.

An important part of the electrical installation is the provision for pumping water. One pump is used for filtered water and one for the storage tanks on the roof, of which the overflow is used for flushing and the like. The ordinary run of water pumped is about 28,000 gallons in eight hours—and it has run as much as 50,000 gallons in twenty-four hours. An interesting feature in the handling of water is that the level of the basement is below the city sewer system, and in consequence all water used here must be pumped up to this height. The walls are painted up to this point to mark the level. A deep well was sunk 300 feet below the building and a pump installed with a view to furnishing water for the storage tanks, but there was found to be too much sand present and the project was abandoned.

The building is electrically cleaned and ventilated. One vacuum cleaner machine suffices, with outlets on each floor. The ventilator fan is located on the eleventh floor and is of the exhaust type. It serves to ventilate the three floors where large departments are located and the continuous change of air is an essential. The exhaust pipes lead along the ceiling of the second floor and thus to the outside.

A service department is provided for women employees of the building on the top floor, where there is a library, rest rooms and a lunch room and kitchen. The coffee receptacle is steam heated, but several electric toasters carry out the electrical idea in this department. With the extremely large number of young women employed in this building, it was, of course, something of a problem how to handle them efficiently during the lunch period. This was eventually accomplished by staggering their rest hours, releasing a group every ten minutes from 11:40 to 1:00. In this way the kitchen is kept clear and the girls find both space and time for a comfortable meal.

The main switchboard is located in the basement in the main engine room. The d. c. side carries the current used for the various motors in use throughout the building. The energy for the running of the elevators does not go through the switchboard but is taken direct from the bus bar at the back to the eleventh floor where the motors are located. Very slow motors are used in this connection with a direct wind drum, 26 r. p. m. The main load is carried on the a. c. side. This governs the current for lights, dictaphones and general use. The lights are so arranged that two or three floors can be switched off at once, thus saving considerable time in a building of this magnitude. Public lights are separate so that in case of fire they will not be switched off, but corridors, elevators and main doorways remain lighted. The switchboard is provided with a peak load recorder, the records of which are of considerable interest as showing the time of heaviest burden and the effect on this of the weather and the daylight saving law.

Aside from the a. c. and d. c. service for the building, the stores and sidewalk elevators and the sprinkling system of the entire building are provided with independent service. The sprinkling system is an A. D. T. system with thermo couples. Any great change in temperature or interference with the system starts the bell to ringing in the engine room and at the same time in the offices of the A. D. T. service. Three tanks under pressure are provided on the roof of the building as part of the system.

An especially railroad application of electricity is found in the extensive telephone system of the building. There are literally hundreds of regular telephones located within the building, and aside from that, the company has its own system which connects all offices of the company. It is possible not only to telephone but telegraph to Sacramento and other offices of the Southern Pacific over these lines, all within the company's system. A special adaptation of this is in the handling of pullman tickets. Considerable confusion used to be met with in the selling of tickets at different offices in San Francisco, but this has now been obviated by the use of the telephone. A central station handles all the business with rotating files and records at hand so that the operators may reach them conveniently. In this manner both error and delay are avoided.

There are, of course, many minor uses of electricity, such as the use for the operation of office devices and the like, which have not here been mentioned. In fact, such an office building is a small city in itself, and if there are any uses of electricity adaptable to its circumstances not yet in use, it is only a question of time and the education of the individuals concerned until they may find their place.—Journal of Electricity.

Additional Fee Refused

An additional fee of $7349.13, asked by Mr. Edward M. Lazarus, Portland architect, for his services in connection with drawing up the plans for the Visto House at Crown Point, was declined by the county commissioners. The refusal was based upon the report of County Auditor Martin that the claim was neither fair nor just, although it covered considerable extra work. Because Mr. Lazarus had already been paid one fee, the claim was contested.

When business is good advertising is an opportunity. When business is bad advertising is a necessity.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Berkeley School Programme

As announced in the June number of this magazine, Mr. William C. Hays, professor of architecture at the University of California, has accepted the invitation of the Berkeley Board of Education to become supervising architect in the construction of the new school buildings under the $2,321,000 bond issue recently authorized. Mr. Hays is to receive 8 per cent of the construction cost of all buildings erected. He will engage as consultant in the outlined programme Mr. James O. Betelle, architect of the Board of Education at Newark, N. J. The latter is a lecturer in the school of architecture at Columbia University and an expert on school construction work.

Mr. Hays has also submitted the following names to the Board of Education as possible assistants in the work: Messrs. J. J. Rankin, assistant designer of the Oakland Y. M. C. A. and the First Presbyterian church in San Francisco; E. W. Yount, supervisor of the Lux School, San Francisco; Walter H. Ratcliff, Berkeley city architect; Major John D. Galloway, construction engineer, and William E. Leland, ventilating and lighting expert. Others whose names have been mentioned as possible members of Mr. Hays' staff are Mr. Horace G. Simpson and Mr. Henry H. Gutterson.

G. A. Applegarth Busy

Mr. George A. Applegarth, architect in the Claus Spreckels building, San Francisco, has completed preliminary plans for a high class apartment house to be erected at Larkin and Francisco streets, at an estimated cost of $450,000. It will have eleven stories. Mr. Applegarth has also made plans for a four-story Class C apartment house at Octavia street and Broadway, and for alterations and additions to the Sanders building on Polk street, near Washington, San Francisco.

Auto Truck Building

Mr. Henry Shermund, Mills building, San Francisco, is preparing plans for a one-story brick auto truck building to be erected on Howard street, near Eighth street, San Francisco, at an estimated cost of $38,000.

Building Situation Improved

Mr. H. M. Patterson, president of the Southern California Chapter of the American Institute of Architects, recently declared that in his opinion the building situation is better today than at any time in the past thirty months. High prices never stopped progress for any great length of time in the face of demand. No one familiar with local, national and world conditions, has any warrant, he said, to promise lower prices for many years to come.

Will Design Elks' Building

The architectural work for the new Elks' temple, to cost $200,000, will be in charge of Messrs. Cutter & Baume, architects of Spokane.

The construction of the new temple, to be three stories high above the Riverside level and about five or six stories on its north exposure, will be under way before September 1.

San Jose Concrete Garage

The Cahill-Vensano Company of San Francisco have designed and will build a three-story reinforced concrete automobile sales building and garage at First and San Carlos streets, San Jose, for Mr. Ray Fry. The building has been leased to the Harrison P. Smith Company.

Easton School

The Easton School District in San Mateo county will have an $18,000 school addition from plans by Mr. E. L. Norberg of Burlingame and San Francisco.

School Athletic Buildings

Pasadena High school is to have a group of athletic buildings from plans by Mr. John C. Austin, Los Angeles architect.

$100,000 High School Group

Messrs. Allison & Allison of Los Angeles are preparing plans for a $100,000 high school group at Chandler, Arizona.

Swimming Pool

The town of Colusa has had plans drawn for a swimming pool by Mr. Edwin J. Symmes, architect of Alameda.

Has Much Work

Mr. S. Heiman, San Francisco architect, with offices in the Mechanics Institute building, is preparing plans for a large four-story apartment house to cost $60,000 or more.

Plans have been completed and bids taken by the same architect for a one-story brick store building on Ellis street, east of Jones, San Francisco, for Mr. Morris Rothchild.

Construction has started from plans by Mr. Heiman on a packing plant at Bryant and Converse streets, San Francisco, for Mr. G. H. Roberts, to cost $12,000, and a contract has recently been let to W. C. Duncan & Company, at $11,300, for a two-story residence at Euclid and Palm avenues, Oakland, for Mr. S. Lichtenstein.

Three Town Halls

Construction will shortly be started on three town halls, as follows:

Redwood City, J. R. Miller, architect, $25,000.

Antioch, B. G. McDougall, architect, $45,000.

South San Francisco, Werner & Coffey, architects, $75,000.

Reopens Office

Mr. D. C. Coleman has reopened his office for the practice of architecture in the Maskey building, San Francisco. Mr. Coleman is preparing plans for a five-story loft building on Sansome street and a $10,000 residence in St. Francis Wood.

Two Large Apartment Houses

Mr. F. Manson White, architect, Chamber of Commerce building, Portland, Oregon, is preparing plans and specifications for two large apartment buildings to be built at Astoria, one of which will be four stories high while the other will be six stories high.

$500,000 Court House

Messrs. William Curlett & Son of Los Angeles, have prepared preliminary drawings for a two-story and basement fireproof court house for Pima county, Arizona.

Branch Library

Mr. G. A. Lansburgh, Gunst Bldg., San Francisco, has been commissioned to prepare plans for a $50,000 branch Carnegie library in the Presidio District of San Francisco.

Designing Steel Plans

Mr. Maurice C. Couchot, C. E., is completing the structural steel plans for the new Bank of Italy building at Powell and Market streets, San Francisco.

PROSPECTS

This department is intended to assist architects and engineers in obtaining a line on new work. So far as known, no plans have been prepared for any of the work mentioned, at least not at the time of writing.—Editor.

LINDSAY.—A corporation has been formed headed by Mr. K. C. Gillette, of safety razor fame, for the purpose of building a $250,000 tourist hotel at Lindsay, near Fresno. The building is to have 138 outside rooms. Officers of the corporation include Messrs. E. D. Caldwell, Chas. K. Powt, and A. M. Robertson, all of Lindsay.

SAN FRANCISCO.—The project of erecting an immense market building on the property of the McCreery Estate at Eighth and Market streets, is being revived. A definite announcement regarding the plans of the owners and lessees is expected to be made shortly.

PETALUMA.—Dr. Stuart Z. Peoples and Dr. A. G. Lumsden of Petaluma, have purchased the Petaluma General Hospital property and adjoining cottages and plan the immediate construction of new buildings and alterations to existing buildings.

WEIMAR (Placer Co.)—The Heather Glen tract of land belonging to the Pacific Gas & Electric Company, one mile south of Weimar, has been purchased by Mr. T. J. Nicol, an Oakland banker, who will build a $10,000 home.

VALLEJO.—Mr. S. M. Levee, who recently purchased lots at York and Napa streets from Messrs. D. J. Moran and Chas. McCauley, plans to erect ten bungalows in the near future.

LOS ANGELES.—Bullock's Dry Goods Company has leased the northeast corner of Seventh and Hill streets, Los Angeles, and will build a Class "A" addition to existing building.

LODI.—The Lodi Christian Church will build a new church on the site of the old one, to cost $40,000. Messrs. W. A. Moorehead, J. B. Williams and Ellsworth Archer are trustees.

OAKLAND.—Kahn's Department Store will be materially enlarged. A two or eight-story concrete building is planned.

HANFORD.—Owners of Hotel Kings of this city will remodel the entire lower floor of the hotel building.

VALLEJO.—The Church of the Ascension will build a $50,000 home and rectory as soon as the necessary funds are raised.

HAYWARD.—The school trustees are considering additions to the Orchard Avenue Grammar school building.

Oakland Architects Busy

Messrs. Reed and Corlett of Oakland are preparing plans for a one-story reinforced concrete and terra cotta bank building, to be erected at Gustine, Stanislaus county, for the Bank of Newman.

The same architects have completed drawings for eight cottages to be built in Melrose for Mr. E. B. Cross at a cost of $3,500 each.

Country Residence

Messrs. Bakewell & Brown, San Francisco architects, are preparing plans for a $35,000 country house for Mrs. B. A. Breeden, at Burlingame.

Vallejo Church

The Methodists of Vallejo are to have a new church and have commissioned Mr. W. J. Wythe of Oakland to prepare the plans.

Personal

Mr. Robert M. Taylor, former Los Angeles architect, who was in the service during the late war, is now district manager for California of the Pawling & Harnischfeger Co. of Milwaukee, with headquarters at San Francisco.

Mr. Carl Werner, architect, has moved from the Phelan building to the Humboldt Bank building, in offices adjoining those of Mr. Alfred I. Coffey, with whom Mr. Werner is associated in designing the new city hall for South San Francisco.

Mr. Loring P. Rixford, who gave up his San Francisco architectural practice to enter the government service during the late war, is now in New York city and may locate there permanently.

Mr. C. C. Dakin has resumed the practice of architecture in San Francisco, and for the present his address will be 1266 Waller street. For some time Mr. Dakin has been at Redding, Shasta county.

Mr. Harry Micheals, who has been state architect of Arizona for the last year and a half, has arrived at Bakersfield, where he will open an office and engage in architectural work.

Mr. Frederick Shaw, Tacoma architect, has returned after an absence of nearly two years spent as an officer in the United States army. He has resumed practice with offices at 4140 Tacoma building.

Messrs. Wright and Sala of Stockton have formed a partnership with offices in the Bank of Italy building. Catalogues and trade literature are desired.

Mr. W. C. Hays, recently appointed architect of Berkeley's new school houses, is in the East on business.

Spokane Architect Busy

Mr. Arnott Woodroofe, architect of Spokane, reports much activity in building operations at Spokane and in that vicinity. Among the jobs for which he is architect and has plans prepared or under way are: Residence in Cannon Hill Park, Spokane, for Malmberg & Ericson, who are doing the construction work; tile garage and two store buildings for Imbler & Cliford at St. Johns, Washington, to cost about $15,000, and a $4,500 residence at Almira, Washington.

Residences and Commercial Buildings

Mr. Arthur R. Kelly 1110 Story building, Los Angeles, is preparing plans for residences and commercial buildings to be erected at a new townsite near Jerome, Ariz., for the United Verde Copper Co. The work will include about 100 houses, stores and other mercantile buildings. The construction will be of reinforced concrete.

Oregon State Board Organizes

The five architects constituting the Oregon State Board of Architect Examiners have effected permanent organization with Mr. W. C. Knighton of Portland, president; Mr. J. E. Wicks of Astoria, vice-president, and Mr. Morris Whitehouse, Portland, treasurer. Messrs. Lee A. Thomas of Bend, Ore., and W. G. Chandler of Marshfield are the other two members of the board.

The board has selected Mr. George Post, associated with Whitehouse & Fouilhoux, as secretary. This is the only office which carries with it a salary.

Mr. Post is well qualified to hold the position and no doubt was selected largely because of his untiring efforts in securing the passage of the bill by the last legislature.

Prior to coming to Portland, Mr. Post was a practicing architect in Salem. He is a young man and has many friends in Portland as well as in Salem.

School Buildings

Mr. George W. Kelham has completed plans and awarded a contract for a $50,000 school building at Vallejo for the U. S. Housing Corporation.

Mr. Lewis P. Hobart has completed plans and bids have been taken for an addition to the Hillsborough school, to cost approximately $15,000. Mr. Hobart is also making plans for a $12,000 residence for Mr. George M. Merritt.

Class A Warehouse

Mr. Arthur R. Kelly 1110 Story building, Los Angeles, has prepared plans for a five-story Class A warehouse to be erected at Clarkdale, Ariz.; owner's name withheld. It will be 80x120 feet, and will be of reinforced concrete construction with steel sash, elevators, gravity chutes and all modern appliances and equipment.

Big Concrete Dam

The City of San Francisco is advertising for bids for the construction of an immense reinforced concrete dam, 600 feet long, and 212 feet high at the west end of Hetch-Hetchy Valley. Bids are to be opened July 30th. A bonus of $60,000 is offered.

Two Country Homes

Mr. Warren Skillings, architect of San Jose, has completed plans for two homes in Santa Clara county. One is for Mr. J. Woolf of Mountain View, to cost $10,000, and the other at Sunnyvale for Mr. Harry L. Parkman, to cost $8500.

Hotel Alterations

Mr. W. H. Weeks has awarded a contract for $40,000 worth of alterations to the Hotel Manx at Powell and O'Farrell streets, San Francisco.

Oakland Department Store Building

Kahn's department store in Oakland is to be materially enlarged, the owners having purchased additional land, which will give the business a frontage on Broadway of 230 feet. Mr. C. W. Dickey made the plans for the existing building. No architect has been announced for the addition, which latter will be either a two or eight-story structure.

Marysville Hotel

Plans for a four-story reinforced concrete store and hotel at Marysville are being prepared by Mr. Clay N. Burrell of Oakland. The project is being financed by the Coyt Investment Company, which is prepared to invest $200,000 or more, provided satisfactory permit is obtained from the State Corporation Commissioner.

Residence Flats

Plans have been completed by Mr. Walter C. Falch, Hearst building, San Francisco, for two residence flats and a private residence for Mr. John Lukes on Fillmore street, near Post, San Francisco, estimated to cose $14,000. Mr. Falch has also made plans for a $14,000 residence in Merritt Terrace for Mrs. H. Smith.

San Francisco Residence

Messrs. Ward & Blohme, Alaska Commercial building, San Francisco, are preparing plans for a two-story and basement frame and stucco residence and garage to be built on Green street, between Broderick and Divisadero, San Francisco, for Mr. Alfred Hanify, lumber man.

Oakland Apartments

Messrs. Miller & Warnecke, who have offices in San Francisco and Oakland, have prepared plans for a three-story frame apartment house to be erected on Grand avenue, near Perkins street, Oakland, at an estimated cost of $45,000. There will be twelve apartments of three and four rooms each.

$70,000 Recreation Building

Miss Julia Morgan, architect in the Merchants Exchange building, San Francisco, has completed plans and a contract has been let for a one-story brick recreation building, with swimming pool, gymnasium, etc., for the Y. W. C. A. at Salt Lake City. The contract is for $70,000.

San Jose State Building

The State Department of Engineering, Sacramento, has received bids for a reinforced concrete assembly hall to be built at the State Normal School, San Jose. Five bids were received, the low man being Mr. Howard S. Williams, whose figure was for $65,544.

Eureka Theatre

Messrs. Reid Bros., California-Pacific building, San Francisco, are preparing plans for a large concrete theatre at Eureka, which is to be leased by Messrs. Ackerman & Harris of the Hippodrome Circuit. This is the third playhouse this firm has designed within the last couple of months. Construction has been started on a $100,000 building in Santa Cruz and one of approximately the same cost is being built at San Rafael.

Church and Parochial School

Messrs. Shea & Lofquist, Chronicle building, San Francisco, have completed plans for a $50,000 Catholic church at San Rafael. They have also been commissioned to prepare drawings for a three-story reinforced concrete parochial school at Sanchez and Valley streets for St. Paul's Parish of San Francisco.

Architect Crim Busy

Considerable new work is reported by Mr. W. H. Crim, Jr., San Francisco architect. This includes additions to the residence of Capt. J. F. C. Hagens on Jackson street; one-story concrete store building on Mission street, west of Fourth, for Mrs. A. Bryan, and a $40,000 store building on Post street, near Hyde, for Mr. Jacob Dietzen, San Francisco.

School and Residence

Messrs. Woollett & Lamb, architects in the Physicians' building, Sacramento, are preparing plans for a $35,000 school house at Dunsmuir. The same architects have completed drawings for a residence in Modesto for Mr. J. C. Penny, estimated to cost $8000.

Parochial School

Messrs. W. D. Shea and H. A. Minton, architects at 244 Kearny street, San Francisco, have completed plans and taken bids for a $60,000 concrete parochial school building at Fourteenth avenue and Irving street, San Francisco.

$30,000 Warehouse

Mr. Joseph Cahen, 333 Kearny street, San Francisco, is preparing plans for a $30,000, three-story concrete warehouse for Mr. Milton Auerbach at Second street and South Park, San Francisco.

Berkeley Residence

Mrs. C. F. Weber, widow of the late C. F. Weber, school furniture dealer, is to build a $15,000 home on Russell street, Berkeley, from plans by Mr. W. H. Ratcliff, Jr. It will be in Claremont Court.

Court House Bonds Voted

The citizens of Red Bluff have voted $900,000 for a new courthouse, new roads and bridges. Mr. W. H. Weeks will design the court house.

To Promote Housing on Coast

Mr. Mark C. Cohn has been appointed Pacific Coast representative of the "build now and own your own home" division of the U. S. Department of Labor. It is the intention of the Department of Labor to inaugurate a home-building campaign on the Pacific coast. There is a shortage of houses in practically all the coast cities. It is most acute in Seattle and other places in the northwest. The campaign will be organized by the Department of Labor in conjunction with city officials and civic organizations.

$250,000 Apartment House

Mr. J. R. Miller, San Francisco architect, is preparing plans for an eight-story and basement Class A apartment house to be erected on the southwest corner of Jackson and Laurel streets, San Francisco, for Mr. John D. McKee of the Mercantile National Bank.

Each floor will have two high-class apartments of six rooms, two baths and two servants' rooms. The apartments will all have a fine marine view.

Los Banos Creamery

Plans have been completed by Mr. H. J. Brunnier, structural engineer, in the Sharon building, for a creamery at Los Banos for the California Central Creameries Company. Besides the main building, three stories and 150 feet square, there will be a power house and warehouse. Improvements will cost approximately $175,000.

Residence for Mr. C. J. Hillard

Plans are being prepared by Mr. Alfred H. Jacobs for a $25,000 residence for Mr. C. J. Hillard. Plans have been completed by the same architect for a $250,000 apartment house for Mr. Hillard. This is the first of several high-class apartments which the same owner intends to build in San Francisco in the near future.

Large Apartment House

Messrs. Willis Polk & Company, Hobart building, San Francisco, have prepared preliminary plans for an eight-story reinforced concrete apartment house which the Metropolitan Apartments Company, Inc., will build at Washington and Gough streets. Mr. Morris Selig, 33 Montgomery street, is promoting the enterprise.

Sacramento School Addition

Mr. A. Willoner, architect at 403 21st street, Sacramento, is preparing plans for additions to two schools in North Sacramento, which will aggregate in cost about $15,000.

Alterations to Colusa Bank

Mr. J. S. Gould, Colusa, is preparing plans for additions and alterations to the Colusa County Bank.

College Buildings

Mr. Norman F. Marsh, 211 Broadway Central building, Los Angeles, is preparing preliminary plans for the two new buildings to be erected at Redlands for the University of Redlands. The science hall will be two stories and basement, 60x120 ft., and will contain lecture rooms, laboratories, and complete science equipment. The men's dormitory will be two stories and basement, 136x40 ft., and will have bowling alleys, club room, dining hall, kitchen and servants' quarters in the basement, and accommodations for 58 students in the upper stories. The cost will be about $150,000.

Tire Factory

The Goodyear Tire & Rubber Co. has purchased the Ascot Park property and 320 acres south of the park in Los Angeles, as a site for a large manufacturing plant and industrial city. Approximately $4,000,000 will be expended in the erection of a group of buildings for a tire manufacturing plant and about $1,500,000 will be invested in a cotton mill to be operated in conjunction with the tire plant.

Store Alterations

Messrs. Morgan, Walls & Morgan, 1124 Van Nuys building, Los Angeles, have prepared plans for alterations to the front and interior of the Winton Garage building on the west side of Flower street, between Twelfth and Pico streets, Los Angeles, Mr. Wm. Garland, Jr., owner. The work will include new plate glass and metal fronts, tile base and entrances, new woodwork in showroom, general alterations to the offices and shop.

Frame Residence

Mr. Robert H. Orr, 1301 Van Nuys building, Los Angeles, has completed plans and work has commenced by day labor under the owner's supervision, on an 8-room Colonial residence at Claremont for Mr. A. W. Richards, of that place.

Brick Building

Messrs. John P. Krempel and Walter E. Erkes, 415 Henne building, Los Angeles, are preparing plans for a 2-story brick office building to be erected on East Third street, near Central avenue, Los Angeles, for Mr. J. M. Waterman, produce dealer.

Madera High School

Owing to a technicality in the recent bond election, bids for additions to the Madera High school were not opened as scheduled and the work will probably be readvertised. Swartz & Swartz, of Fresno, are the architects.

Sacramento Architects Busy

The Sacramento architects report much work in prospect.

Mr. E. C. Hemmings is preparing plans for a $30,000 residence for Mr. Henry Shafer and he has completed drawings for alterations to the C. J. Heeseman store.

Mr. R. A. Herold has made plans for extensive alterations to the Elks building, also alterations to the Chowchilla Hotel; lighting fixtures, etc., for the Masonic Temple, and he is at work on drawings for a service building and power house to be erected at the County Hospital and for additional buildings at Weimar for the Tubercular Hospital.

Mr. James Seadler is busy on a number of residences and bungalows, including a bungalow at Winters, Yolo county, for Mr. H. R. Brink.

Millions for Wayside Inns

The California Hotel Association of which Mr. D. M. Linnard, is president, Mr. Chas. E. W. Moore, vice-president, and Mr. Allen Pollok, business manager, is planning to spend several million dollars in constructing wayside inns to accommodate the automobile travelers along the Pacific Highway from the Mexican line to British Columbia. It is announced that the first inn will be built at a point midway between San Francisco and Los Angeles, construction to start early next year. The name of the architect has not yet been announced. The association will also build two inns in Oregon, both of which will cost not less than $1,000,000 each.

Fresno Architect Has Much Work

Mr. Ernest J. Kump, architect of Fresno, reports work in his office or under way aggregating close to $1,000,000. This includes a bank building at Visalia, bank building for the Reedley National bank, Exeter Union high school, Exeter grammar school, several commercial buildings and residences, besides a number of school houses of medium cost mentioned in previous issues of this magazine.

American Society

Mr. J. W. Miller, Engineer and member of the Aero Club of the Northwest, and who has been chief engineer of the Being Airplane Company, delivered an address before the Seattle section of the American Society of Civil Engineers at its meeting held at the Engineers Club, Arctic building, the evening of May 26, on the subject: "Development of Civil Aeronautics."

When Reader Becomes Writer

On active service with the
American Expeditionary Force.

Beaune, May 21, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—Just finished reading your article concerning the work of Mr. Ernest Coxhead in your April issue. I happen to be one of "Pop's," as we call him, thirty men, and have been associated with him since he started his work. It sure has been fine and we all have derived great benefit from it. He will have a whole lot more to tell when he arrives home. We are all busy now preparing for exhibition in Washington, D. C., and a trip to Paris.

Being one of the original charter members of Mr. Coxhead's school at Le Mans and therefore deeply interested in the article dealing with the birth of the institution, I would like you to send to my home address, together with a bill for same, a copy of your April, 1919, number.

Yours sincerely,
Bliss B. Straight.

San Bernardino, Cal., June 21, 1919.

Where Is Mr. Dupre?

The Architect and Engineer,
San Francisco, California.

The Editor:—I desire to learn the address of Mr. J. F. Dupre, an architectural draftsman. His last address was Los Angeles. I am unable to locate him at present and thought a notice in your Architect and Engineer would bear fruit. This form of locating one is out of the usual way, and were it not important I would not resort to this method. I will appreciate the favor if you can grant it.

Yours truly,
F. T. Harris,
206 Katz Bldg.,
San Bernardino, California.

Likes the Magazine

The Architect and Engineer,
San Francisco, California.

The Editor:—The June issue of your book just reached us and we wish to assure you that we enjoyed reading same, not only from the standpoint of the issue itself, which is a fine one, but from the fact that the book is a California publication.

With kind personal regards from the writer, we are,

Very truly yours,
C. F. Weber & Co.,
L. N. Freicke.

Phoenix, Arizona.

Steamer Faith Changes Hands

The steamer Faith has been sold to the France & West Indian Shipping Co., of New York, for $450,000, which is something over $100 a ton. This is deemed a good price for her in view of the fact that foreign steel steamers are being offered in this market at prices ranging from $75 to $100 a ton, which can be operated at very much less cost than the Faith, under the American flag.

The original cost of the Faith, including the yard in which she was built, and all experiments, was $890,000. The Faith was built in the heat of war conditions, and in normal times could have been built for about three-quarters of her actual cost.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

The Engineer in Politics*

By W. A. STINCHCOMB,
County Engineer of Cuyahoga county, Ohio.

LET me make myself clear in the use of the word "politics." I do not refer to it in its partisan sense, but I do most decidedly refer to it in a civic or governmental sense.

To say that the American Association of Engineers and its members shall not go into politics would be to deny to the country and the local communities within which it has chapters the service of an organization of men who, by natural ability, by education, by training and by experience are most capable of serving the public and in directing and educating the voters on questions of public policy, and would deny to its members the fulfillment of their obligations as citizens of this Republic.

Now I know that a natural tendency exists among engineers not to take an active part in politics, but by so doing they evade their full responsibilities as citizens. In my opinion a man's responsibilities to his city, his state and his country increase just as his abilities and opportunities increase.

Shall anyone say that the engineer's training and experience does not better fit him to solve the problems of government as our civilization becomes more complex, than one trained in any of the other great professions?

Some of the Political Problems.—In our cities practically all of our public problems are subjects to scientific analyses. Is the subject one of developing the physical plant of the city, including the adequacy and location of its highways, the kind and strength of its pavements, the development of its park and recreation facilities, the working out of a proper drainage or the planning of its transportation facilities, either rail or water? Surely the engineer is best qualified to solve such problems. He is now called on for advice in these matters, and in my opinion he should be the one to largely decide.

In matters of public health as influenced by problems of sanitation, such as sewage and garbage disposal, water supply and building and housing regulations, he is best qualified.

Even in the welfare and social problems of the city his analytical training fits him to search out the cause of our social evils and ills—to relieve them rather than apply only palliative and preventive measures.

Shall any one say that he is less qualified to organize and direct the ordinary housekeeping affairs of a city because of his training and experience?

One of the most difficult and always present problems of all government is that of financing and taxation. It is the constant duty of the engineer in his practice to so design, execute and organize his work so that in terms of unit cost that cost shall be as low as possibe. All problems of public taxation must go back to a proper appraisal of the property taxed whether that property be in a tangible or intangible form. Here again his experience and training fit him well to efficiently serve.

So we might analyze the many problems of state government, such as the development of a system of highways commensurate with the traffic needs of the day, the regulation and control of public utilities, the development of water transportation, the industrial and social problems affecting the workers in mines and factories, the care of the wards of the state, the development of its educational system, and the conservation and development of its natural resources. In all of these we find his training and experience should particularly fit him to serve.

Our national governmental problems are best solved when the engineering mind influences their solution.

And so in my opinion the engineer should take a dominant part in politics, and this association as an organization should wield a forcible influence in determining the civic and governmental policies—not as a right only, but as an obligation which both the engineer and the association owe to society.

Political Activity Beneficial to the Association.—"But," I hear some timid soul say, "what effect will that action have on the engineer and this association?" In my opinion it cannot be anything but beneficial.

This convention has had its attention called to the inadequacy of the salaries paid engineers in public service. Various means will be discussed as to methods by which salaries may be properly and equitably increased. How better can this be done than that the members of this profession shall take an active interest in the political questions of their communities?

We have noted the appointment of men neither fitted by education or training to take charge of departments of public service which really require the services of the trained engineer. We have seen the engineer subordinated to such superiors. He

* From an address delivered at the last annual meeting of the American Association of Engineers.

has seemingly been content to let his "light shine under a bushel," and have the accomplishments of his brain and energy appropriated by those to whom they do not rightly belong. By a more active participation in politics these injustices would be removed and credit bestowed where it rightfully belongs.

We have seen national organizations of other professions jealously guarding the business interests of the members of their professions. There is the National Bar Association, the various national organizations of the medical fraternity, whose efforts are used not only in maintaining a proper code of ethics in the profession, but in seeing that the members of that profession as a body are not discriminated against by the passage or operation of what they consider to be unjust laws. And so in halls of legislatures their representatives are seen when measures affecting those professions are under discussion—and the professions referred to do not have to do with the public work of the state in any degree compared with that of the engineer.

It has always seemed to me that the engineer himself has been to blame for the position in which he is held by society and for the meagerness of the salaries paid by both public and private corporations for his services. He has been retiring in his nature, content to too large a degree to take his reward from the satisfaction growing out of difficult problems well solved and difficult work well performed.

I recognize the fact that there are certain kinds of professional advertising which are distasteful, but I know that you cannot expect to have the public place a proper estimate on the value of a profession unless that profession itself as an organized unit holds it up to a high standard of value. This in large measure can be accomplished by a proper indulgence by the engineer in the political problems and discussions of the day.

We cannot in a democracy expect to maintain our government for any length of time in advance of the intelligence of the voters. The intelligence of the voter is only expressed through the polls and is influenced by the kind of political education which the voter received. In elevating the standard of citizenship the engineer can and should be a leader in his community. To be anything less not only results generally to the disadvantage of the individual but decidedly to the disadvantage of his profession, and is a direct evasion of the responsibilities of citizenship which his training and ability impose upon him.

Therefore, in my opinion the members of this organization and the organization itself should take an active part in politics in the sense in which the word has been used.

They and it should become leaders in moulding public opinion in a manner free from partisan political bias.

Engineer versus Architect as House Designer

Under the caption "Wanted—A Cheap, Acceptable House," the Engineering News-Record prints this most extraordinary comment:

> Engineers have not had much to do with building dwelling houses. The single house is so obviously the architect's field that when the number is multiplied, and whole villages are built at once, it is the architect who dominates the design and construction of the houses themselves and leaves to the engineer the public utilities alone. Such was the case with the government housing programme carried out during the war. In consequence, we find that practically nothing valuable was developed by this forced work, in the way of novel or economical house design. The engineer is accustomed to multiple production, to the reduction of pieces and effort by the repetition of the unit. The architect, on the other hand, is concerned with the general effect, and concentrates on the perfection of the unit itself. Much was saved in the government housing methods, but the impression cannot be avoided that some cheaper, and equally pleasing, form of multiple housing could have been developed than the succession of suburban villas which look so delightful in the architect's perspective but which lend themselves so little to economies of production. War emergencies have passed, but the housing shortage is worse than ever. Engineers cannot escape their duty of entering this field. Can they not impress their ideas on the design of the house itself, so that there may result that only solution of the present deadlock between high prices and the necessity for shelter—reduced unit costs due to efficient design as well as efficient management of construction?

Thus the engineer as a multiple producer is arrayed against the architect as

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JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
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a unit producer, but just what the writer means by "repetition of the unit" is not made clear. A unit of construction and a housing unit are two very different things. When the architect ceased to be a multiple producer or was not a multiple producer, either in construction or design, would be interesting to know. The term unit is just as important to the architect as it is to the engineer. A unit in housing may apply to a single house having its own separate lot, or it may be one of two or more living apartments under one roof. Government housing, referred to by the writer, embraced both separate and combined units, the latter being represented by double houses or apartment buildings.

Multiple production of housing units, involving multiple production of construction units, is the easiest way to achieve economy in construction. This is not unknown or unfamiliar to the architect. It is the oldest known method of providing cheap housing and many examples of it are scattered throughout the United States. Rows upon rows of houses, separate or connected, built on this method, may be found in any large industrial community in the East. They resemble barracks. They do not even suggest comfortable and livable housing. At one time many workmen were satisfied to live in these barracks, just as they were satisfied to occupy cheap tenements in the big cities, because many of them had never lived under better conditions and did not realize that anything more than a mere shelter could be desired.

Modern progress in housing has been away from these conditions. Today the workman wants a real home and if his earnings will permit it a separate and distinctive home. He resents the old barracks idea of housing. Government housing schemes during the war represented modern housing ideas which recognize the right of the workman to a home that is not only comfortable but also attractive. The fact that architects have designed just such houses for the government is evidence that they have had a thorough understanding and appreciation of the problems presented to them. But they have carried the multiple unit idea much further, perhaps, than might seem possible even to an engineer, considering the results achieved. The same identical house plan may be used in scores of houses but with the skilful touch of design applied by the architect no two of them may look alike. In fact each of them might appear as an entirely independent creation. We do not know of any government housing scheme, and in fact we do not believe there were any, in which the multiple unit idea was not applied to secure economy in construc-

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tion. Some persons may imagine that because a house looks plain and simple it is easily designed and is necessarily cheap. Such is not the fact. The more simple the design the more necessary it is to have good architectural treatment to make the house attractive.

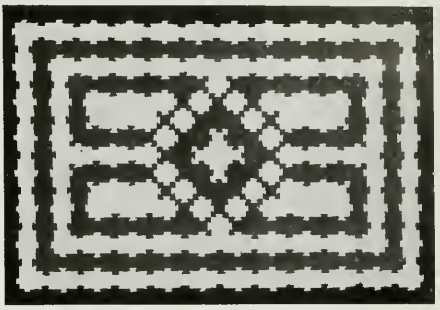
Engineers are not likely to rush into the house designing business to meet the demand for a "cheap, acceptable house" any more than architects will rush into the bridge designing business to furnish a "cheap, acceptable bridge." House designing is the special province of the architect just as bridge designing is the special province of the engineer. The engineer may lend valuable aid to the architect in construction problems. Indeed he has already done so. But a cheap house constructed on the multiple unit idea without regard to good architectural plan or design will never be acceptable.—Southwest Contractor and Builder.

Engineers and Architects Association

The last meeting of the Engineers and Architects Association of Southern California, before the summer recess, was held in Los Angeles the latter part of June and was the largest and most enthusiastic held since the dinner meetings, suspended during the war, were resumed. President H. Z. Osborne, Jr., brought up the question of affiliating with the National Association of Engineers. The board of directors has had the matter under consideration and has been in communication with officials of the national organization. He stated the aims and objects of the two organizations were similar and he had been assured the Engineers and Architects Association could affiliate with the national body and retain its established name and present membership.

Major Garrison Babcock, past president of the National Association of Engineers, was present and gave personal assurance that there would be no obstacle to affiliation on the lines stated by President Osborne. He reviewed briefly the history of the national association, which had its inception in Chicago four years ago and has grown rapidly, having now a membership of approximately 5000. He stated the new association filled the needs of the younger engineers for an organization through which they might work for the advancement of their profession and better their conditions in a social and economic way. There is no conflict, he said, between the new association and the older engineering organizations which give more attention to technical matters.

By unanimous vote the directors were authorized to continue the negotiations for affiliation with the national associa-



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tion and submit later a definite proposition to the members if affiliation can be made along the lines suggested by President Osborne.

Architecture and Engineering—Two Professions Indispensable to Each Other

THE engineer is indispensable to the architect. Without the aid of the architect's specialized training in the co-ordination of the functions of building, and in the harmony of line and design, the engineer's expert knowledge in his particular field would fall short of attaining the highest and best results.

That there should ever be conflict of thought or action between members of the two professions seems absurd. They are distinct in purposes and achievement, yet when the practice of each is developed along its logical lines, it supplements the other—and the linking of the two professions in harmonious endeavor results in the achievement of buildings that please the aesthetic sense, that eliminate waste space, that make for a labor-saving co-ordination of the various parts of the completed structure.

Engineers and architects approach their problems from different angles. The engineer's busines it is to deal primarily with stresses and strains, expansions and loads. The architect's problem is primarily one of planning. He may be lost in the field of engineering research, yet by training and mental habit his problems are those of so coordinating the areas and functions of a building that the completed structure will be harmoniously and economically arranged. There are engineers who excel in planning just as there are architects who are gifted in the science of construction.

Yet the professions are so distinct, and each requires so great an amount of study, research and patient endeavor, if anything beyond mediocrity is to be achieved, that no man can expect to attain the most satisfactory result by endeavoring to master the details of both. This is an age of specialists. The most successful architects are those who specialize in one branch of architecture. The most proficient engineers are those who concentrate upon one line in the profession. The best results, then, are to be achieved by each man concentrating upon the field in which he excels. The criticism has been made that architects who have tried to solve engineering problems have achieved unsatisfactory and costly results, and that engineers who have assumed that they knew how to plan, produced buildings that were deficient because they thought more of construction than of plan.

Following this thought the Building Review says: "If engineers will concede the special value of architects in the sphere of planning, and form an association with competent men on large engineering projects of this kind, the final result will be a better piece of engineering. The old, mistaken idea that architects are good only to 'make things look pretty' must be discarded. Above all else the modern architect is a planner and in this he can never be approached by men who are untrained and inexperienced in the problems and niceties that good planning involves.

"We see here a better common ground for engineer and architect to meet upon than any other, and from such an understanding of each other's value there can develop nothing but mutual good to each profession, the furtherance of engineering, and the employment by architects of their special ability upon works that at first glance seem foreign to architecture but which in the light here shown proves itself to be simply a proper extension of the architect's work and a legitimate use of the architect by the engineer; just as the architect calls in the engineer to solve his own—the architect's—structural and mechanical problems.

"The engineer is indispensable to the architect as a specialist in a field which the architect sensibly realizes is not his own except indirectly, and no less is the architect indispensable to the engineer in a field that, likewise, the engineer should realize is not his own except indirectly—the field of planning."

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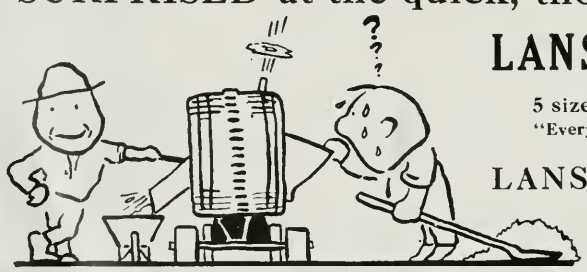

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Would a Law Licensing Builders Be a Good Thing for the Industry?

THERE has just been defeated in New Jersey by one vote a bill providing for the licensing of builders. In Milwaukee during February a bill giving the city power to license building contractors was introduced. Agitation for licensing of builders is nothing new, but the close call for the measure in New Jersey shows that it can be expected to pass in some state in the near future.

Will this be a good thing for the trade in general? Will it tend to concentrate work in the hands of the big contractors, eliminating the small man?

The answer to these questions, says Building Age, depends largely on the manner in which the bill is finally drafted before enactment.

Undoubtedly the majority of capable contractors would welcome any law tending to prevent irresponsible bids and the cut-throat competition indulged in by the contractor who is not enough of a business man to know his costs. And even more important would be the elimination of the incompetent contractor who gives a black eye to good materials and contractors in general. How many people, for instance, have been prejudiced against stucco because they have noticed cracked, unsightly jobs done by men incapable of handling the material correctly? Those badly done jobs naturally form a criterion for the prospective home owner, and he will shun stucco as he would the plague. Again, the sad experiences of many with fireplaces have caused the open fire frequently to be regarded with suspicion. Four-inch walled chimneys, unlined, have caused many a lifetime's savings to go up in smoke; floor joints framed into chimneys, construction that causes plaster cracks—all these should and can be eliminated.

Why should not the public be protected from the contractor who cannot build properly, who, if he makes a mistake, must either retrench by inferior work or become insolvent, and whose work affords him less than day's wages on contracts where a capable builder, wise in labor-saving methods, would make a fair profit; should not the public be protected from such inefficient contractors?

San Francisco Contractor Builds Big Fight Arena

The following from the San Francisco Chronicle Sporting Page, the day before the Dempsey-Willard fight, refers to one of San Francisco's well-known general contractors:

Jimmy McLaughlin, now that his job of building the biggest fight arena in the world is about completed, has turned fight bug. Jimmy admits he is no expert, but he bumped into some fellow last night who was willing to lay $90 to $70, taking the Willard end. Jimmy jumped at the chance to bet on Jack, the lad from the land of the setting sun.

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Engineers Elect Officers

At a meeting held in Portland recently railroad and other civil engineers elected permanent officers for the year and began activities of the Portland Chapter of the American Association of Engineers. Officers were chosen as follows: President, Mr. W. H. Marsh; vice-presidents, Messrs. A. H. McKeen, T. W. Saul and O. Laurgaard; secretary, Mr. R. W. Barnes; treasurer, Mr. C. F. Thomas. A committee on organization and membership was appointed; also a committee to look after the interests of members in the matter of the Oregon license law. A railroad committee was created with a view to the assembling of data and the submission of a report on salaries received by engineers of that calling in the state of Oregon. Secretary R. W. Barnes attended the annual convention of the association at Chicago, on May 13-14, being a delegate from Portland.

Los Angeles Engineers Form Chapter

Los Angeles is to have a chapter of the American Association of Engineers. A temporary organization has been effected, with Messrs. E. G. Sheibley of Riverside, president; A. L. Harris of Los Angeles, secretary, and Everett H. Merrill of Los Angeles, treasurer. A committee on membership was appointed consisting of Messrs. J. F. Lambert and F. C. McMillan of Los Angeles, and E. Earl Glass of Monrovia. A petition for a charter has been forwarded to National headquarters at Chicago, and it is expected the charter will be received in August, at which time a permanent organization will be formed.

Major Garrison Babcock of Chicago, past-president of the national organization, who has just returned from two years' service overseas, was present at the meeting and enlightened those present regarding its aims and objects.

Returns to San Francisco

Mr. A. Merrill Bowser, who has been practicing architecture at Hanford for some time, has returned to San Francisco and is engaged on several important commissions with Mr. C. V. Clausen in the Hearst building. Mr. Bowser has recently let a contract for alterations to the lobby of the Wilshire Hotel on Stockton street for approximately $5,000.

Berkeley Water Front to Become Dock Terminal

The City of Berkeley has leased its tidewater lands for a period of fifty years to Mr. Rufus Jennings, an Oakland capitalist, who is understood to represent an Eastern syndicate which intends to improve the water front with terminal facilities similar to those operated by the Bush Terminal Company in New York. Berkeley receives $100 a month rental. The lease was granted over the advice of City Attorney Earl J. Sinclair, who resigned when the Council refused to abide by his instructions.

Plans for docks and piers, the latter projecting 3000 feet into the bay, will be prepared by Eastern engineers, represented in San Francisco by Messrs. Galloway and Markwart. There will be 3000 feet between each unit to provide for additional docking space. The pier will be of reinforced concrete. The lessees agree to spend $1,000,000 in improving the land.

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China Waking Up to the Use of Modern Heating and Ventilating Apparatus

FIRST-HAND views as to the opportunities of the immediate future in China are given in a letter received from Mr. H. L. Alt, who recently was appointed China representative for Andersen, Meyer & Co., engineers, of New York. Mr. Alt sailed for Shanghai early in December. He writes:

"As far as the heating situation out here is concerned, at present there isn't any situation. That is probably because there is not any heating, to speak of, in Shanghai. There are no furnaces. One residence in Shanghai has hot water heat. Several business blocks have hot water. I have yet to find a steam heating system. The winters are somewhat milder than in New York, but the thermometer goes as low as 11° F. and the cold is the coldest kind of a damp cold, the kind that makes your teeth chatter and your bones knock together even when your heavy overcoat is buttoned tight.

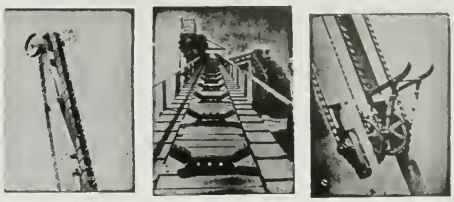
"In spite of coal being $28.00 per ton (Mex.) and never less than $15.00, practically all the heating, if you can call it that, is done with fireplaces, where only about 25% efficiency is developed.

"There is not a boiler or radiator or pipe manufactured in China, and the American manufacturer has this field open to his endeavors.

"I designed one job of hot water heating within two weeks after I landed and have a vapor steam job on hand now. Have also laid out a one-pipe system job for Pekin and am estimating on several others, some of which will be hot blast or forced hot water, for industrial mills.

"I believe there is a great field over here for air washers, as the summers are hot and long. Anything that cools is a God-send. Some of the architects here actually didn't know that an air washer could do any cooling! The funny thing is that the Chinese people have gone without heating for so long that they have in a degree become hardened to the cold and are uncomfortable when a proper temperature is produced inside a building. They wear padded coats and padded vests, resembling bed comforters in make, and these they wear all the time during the cold weather. The result is similar to wearing one's overcoat in the house. Thus, 50° to 60° is very comfortable for them and I recently read an architect's specification for a Chinese hotel in which he asked for only a 30° rise which, with 10° outside, will give only 40° inside temperature.

"You wait until we show them one honest-to-goodness heating job such as we put in the old U. S. A. and some of



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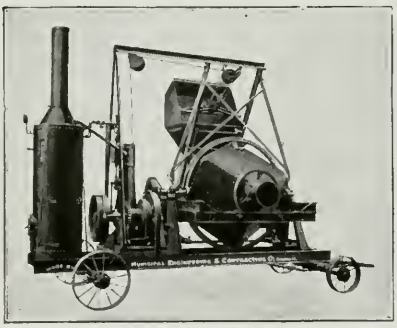

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these English will sit up and take notice, even if it is not done the way we do it at 'ome."

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Badt-Falk & Company, engineers, formerly members of the firm of Badt & Fisher, announce the opening of offices in the New Call building, 74 New Montgomery street, San Francisco.

Badt-Falk & Company will specialize in the sale of steel bars for concrete reinforcement and will maintain a contract department for the fabrication and installation of steel for concrete buildings, bridges, etc., arrangements having been made to carry a large stock of square, twisted and deformed bars in San Francisco and Oakland warehouses.

Both members of the firm are well known. Mr. Badt is a consulting engineer and Mr. Falk has been connected with the iron and steel business on the Coast for some years.

Together with the reinforcing bar business, the firm will also handle the account of the Omaha Steel Works, Omaha, Nebr., who specialize on steel tanks and tank towers.

Forty Million Dollars for Good Roads

California voters have authorized the issuance of $40,000,000 bonds for the completion of state roads already projected and for new state highways.

Of the total amount of bonds authorized, $20,800,000 is for the construction of new roads aggregating more than 1600 miles in length. Approximately $8,000,000 federal aid road funds will be available for these new roads in addition to the amount voted by the state. Approximately $11,000,000 of the new state issue will be applied to the construction of seven state highway laterals which were to have been built by the state and counties cooperating, each paying 50 per cent of the cost. The entire cost of these co-operative roads will now be borne by the state. The remainder of the bond issue will be used in completing the trunk line highways projected under the original bond issue.

California has now voted a total of $73,000,000 for the construction of permanent state highways. The first bond issue authorized by the legislature in 1910 was $18,000,000. The second bond issue authorized in 1916 was $15,000,000. That the third bond issue, for an amount considerably greater than the two previous bond issues combined, was voted by so large a majority, is abundant evidence of appreciation on the part of the people of the value and necessity of good roads.

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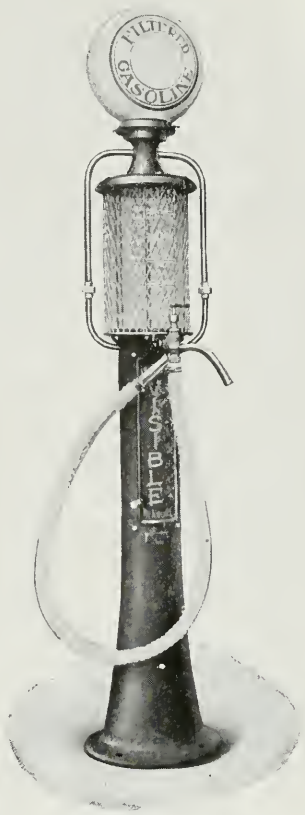

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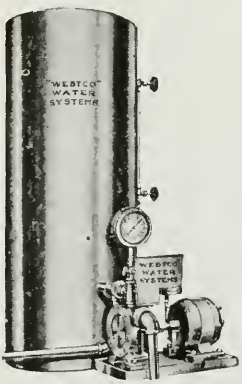

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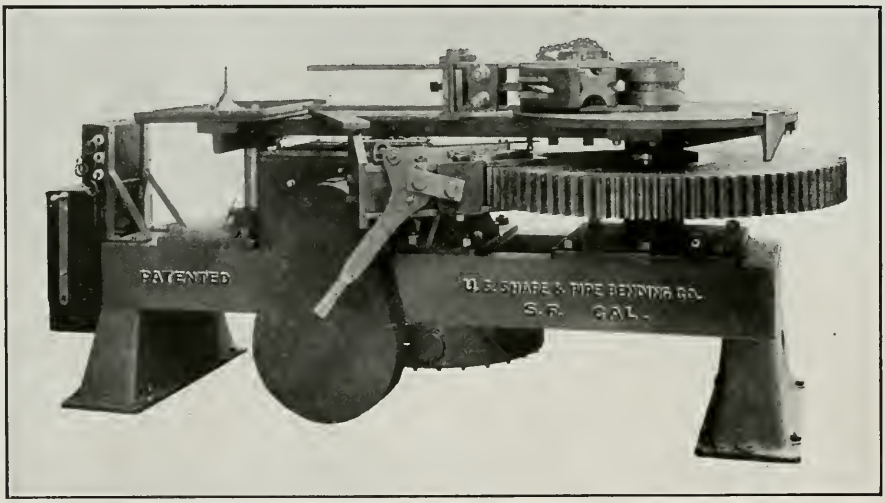

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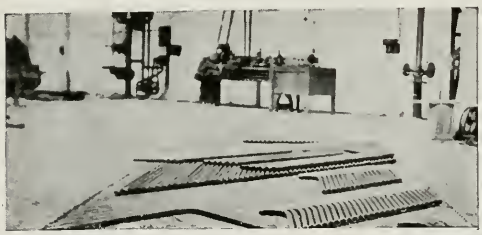

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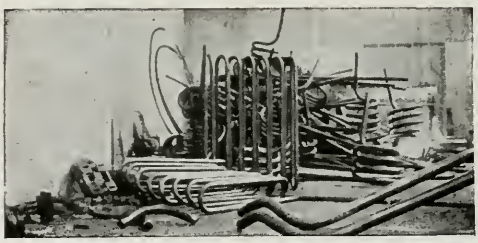

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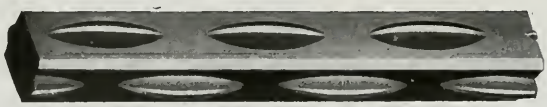

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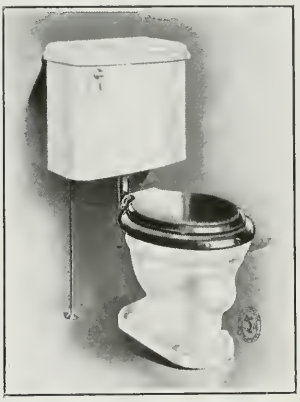

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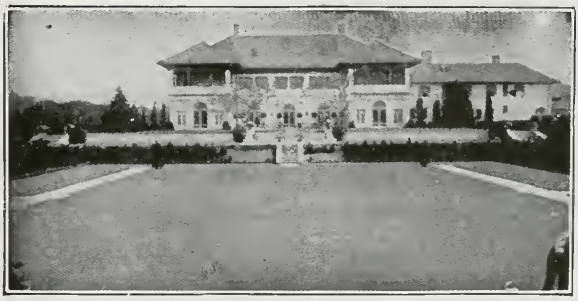

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233 GRANT AVENUE, SAN FRANCISCO
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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CEMENT
Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Paraffine Paint Co., 34 First St., San Francisco.
Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT GUN
Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
Fink & Schindler, 218 13th St., San Francisco.
Mullen Manufacturing Company, 64 Rausch St., San Francisco.
Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
W. E. Mushet Co., 502 Mission St., San Francisco.
Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
Vulcan Iron Works, San Francisco.
H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
Barrett & Hilp, Sharon Bldg., San Francisco.
Clinton Construction Co., 140 Townsend street, San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Palmer & Petersen, Monadnock Bldg., San Francisco.
Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
Steel bars sold by W. S. Wetenball Co., 725 Second St., San Francisco.

CONCRETE SURFACING
"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL
Barrett & Hilp, Sharon Bldg., San Francisco.
Herbert Beckwith, 412 Call-Post Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
Bos & O'Brien, Hearst Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Del Favero & Rasori, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.

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Mills Bldg., Bush & Montgomery Sts. San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

GENERAL CONTRACTORS (Continued)
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Lansing Company, 338 Brannan St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CORK TILING, FLOORING, ETC.
Be-ver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK
California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 530 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
NePage, McKenny Co., 589 Howard St., San Francisco.

ELECTRICAL CONTRACTORS (Continued.)
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Sierra Electric Company, 515 Market St., San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
John Ringius, 252 Townsend St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
General Fire Extinguisher Company, 453 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
Power & Pike Co., 22-24 Main St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HEATING AND VENTILATING MATERIAL, ETC.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

HEATING AND VENTILATING (Continued)
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralph-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INSURANCE
J. T. Costello Co., 333 Pine St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Trussed Kahn Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

PAINTING, TINTING, ETC.
- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zellinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- The Glidden Company of California, 123 Hooper St., San Francisco.

PAINTS, OILS, ETC.—Continued
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
- U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 180 Jessie St., San Francisco.
- James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
- Alex Coleman, 706 Ellis St., San Francisco.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Scott Co., Inc., 243 Minna St., San Francisco.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
- California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
- Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
- Crane Co., San Francisco, Oakland, Los Angeles.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
- H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
- Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
- J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
- Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Wm. F. Wilson Co., 328 Mason St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
P. H. Reardon, 57 First St., San Francisco.

PUMPS
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Rix Compressed Air & Drill Co., San Francisco and Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS
Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Patent Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Building Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

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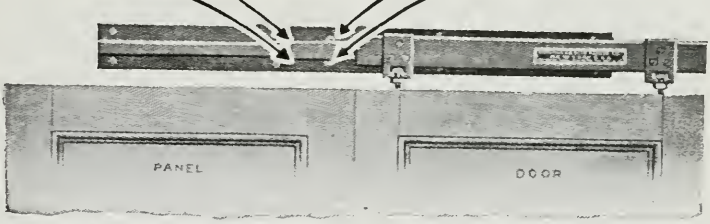

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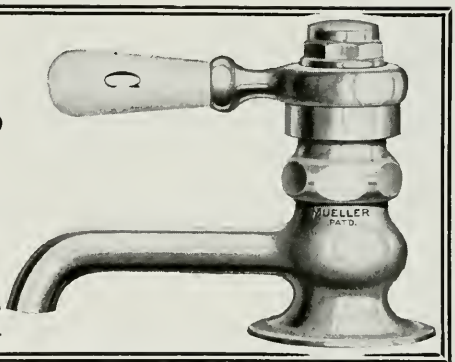

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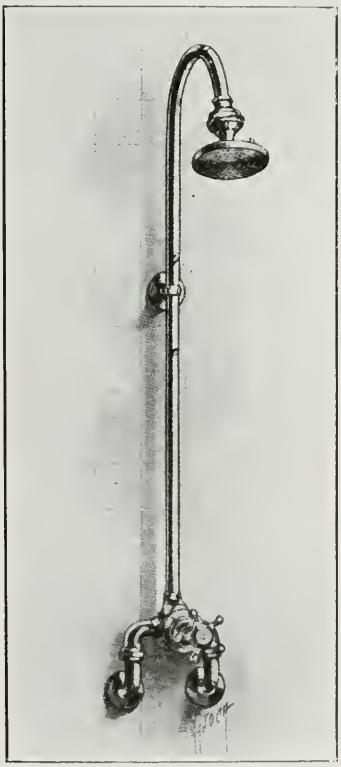

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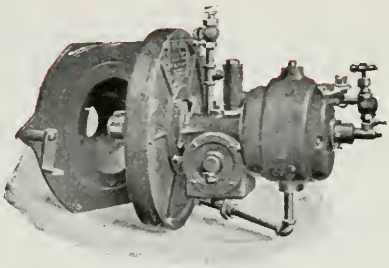

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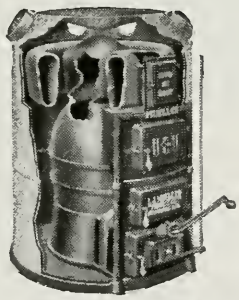

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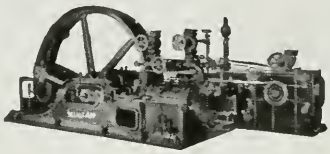

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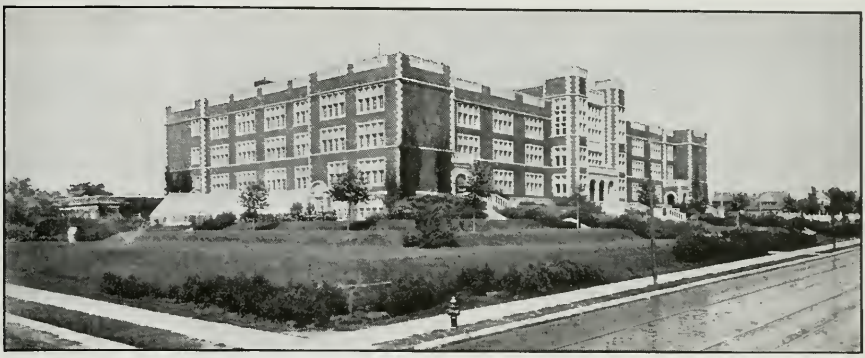

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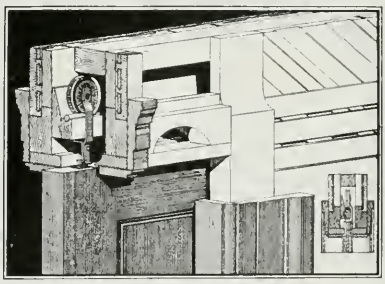

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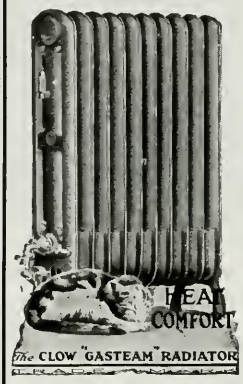

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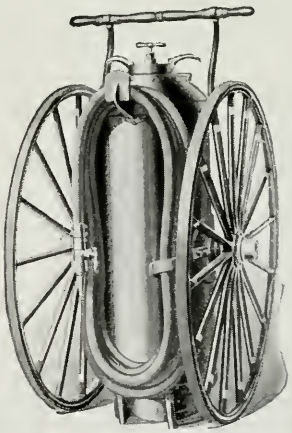

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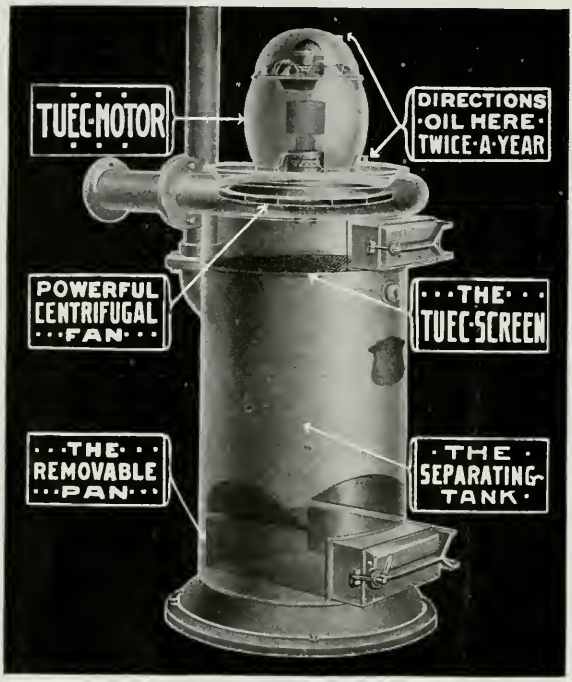

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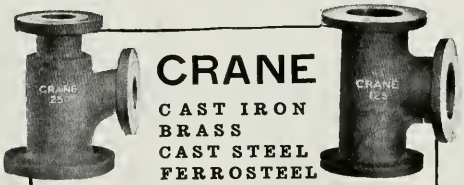

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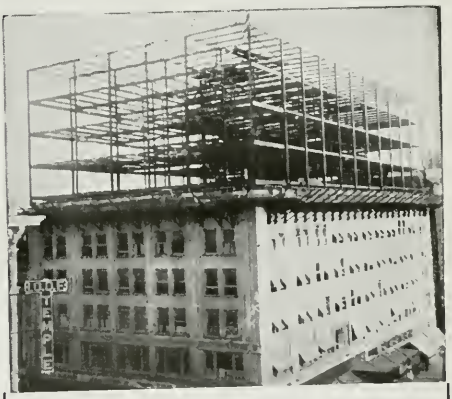

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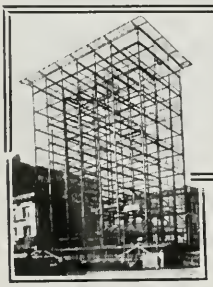

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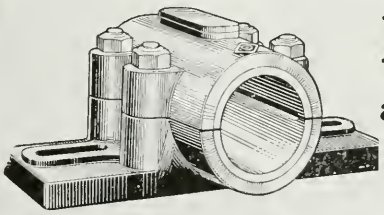

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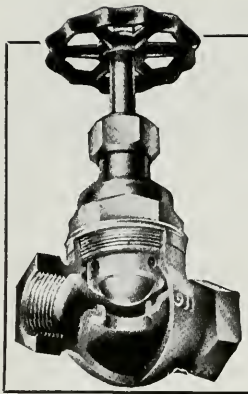

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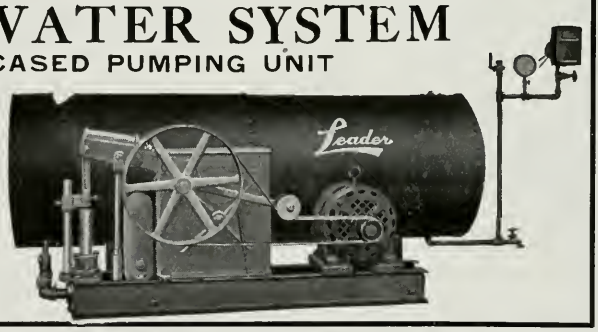

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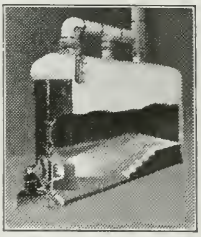

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Volume LVIII. Incorporated Number 2.

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AUGUST, 1919 Vol. LVIII. No. 2

Civic Improvement Ojai, California

How an Old, Uninteresting Town Was Made Beautiful

By FREDERICK JENNINGS

LESS than three years ago what is now the quaint mission village of Ojai, California, was a ramshackle old town called Nordhoff, in a mountain pocket forty miles south of Santa Barbara. It was an eyesore to the owners of the beautiful estates in the vicinity, and one of the owners, Mr. Edward D. Libbey, undertook to remedy the evil. His hopes for the town's rehabilitation were grounded in a belief in the psychological effect of good clothes, translated in terms of architecture.

It happened that all of the stores stood on one side of the street, and Mr. Libbey's first step was to purchase ten acres of ground on the other side, which included a number of dilapidated old shacks. This accomplished, the task of beautification was begun. The old buildings were torn down and in their place appeared a garden and tennis courts. A grandstand was erected, and along the edge of the park which fronted the street was built a Spanish pergola. But before this work was completed it began to be borne in upon the store keepers that their buildings looked disreputable in contrast, and at the psychological moment Mr. Libbey proposed that he would give them the park and tennis courts, and a new postoffice building, if they would join to-

MAIN STREET IN OJAI AFTER IMPROVEMENT
Mead & Requa, Architects

A STREET IN OJAI BEFORE CIVIC IMPROVEMENT

gether and freshen up the appearance of their store buildings. The offer was accepted and Mr. Libbey thereupon engaged the services of Messrs. Mead and Requa, architects of San Diego, to plan a new business thoroughfare for the town. It was discovered that by a slight expenditure on the part of each store owner, a uniform front could be built on all the stores. So the workmen were called in and the task was begun. The store buildings themselves were not disturbed, but an arcaded plaster front was built on all of them. The transformation was complete. Each store owner put up a few hundred dollars, and in return became the possessor of a building enhanced in value and beauty beyond all proportion to the amount of money spent.

But the idea which created the transformation—the idea of giving a man good clothes and seeing him live up to them—did not stop there. Ojai's fame as a village has spread. Committees of citizens have visited it from various places in the state, and already half a dozen small villages are planning to do what Ojai has done.

VIEW OF MAIN STREET IN OJAI AFTER CIVIC IMPROVEMENT
Mead & Requa, Architects

ARCADE, CIVIC IMPROVEMENT, OJAI, CALIFORNIA
MEAD & REQUA, ARCHITECTS

Writing of civic improvements in general and the Ojai community in particular, Mr. Richard S. Requa says:

"A great deal of attention has been given during recent years to the matter of Civic Improvements. Volumes have been written on the subject, committees and conventions have frequently met for its discussion, and almost every progressive American city has either its city planning commission or has under consideration plans prepared by authorities on city planning and beautification.

"In almost every instance, however, the larger cities only have agitated or attempted plans or work along these lines.

"The village or small town has received slight encouragement and has shown little disposition to initiate the movement. This is not because the resident of small communities does not appreciate or enjoy well planned and beautiful surroundings, but because the expense entailed is usually considered far beyond the amount they could raise for such purposes. The small town is usually burdened to the breaking point providing funds for the erection and maintenance of schools, fire stations and other administrative and public buildings. In a large majority of cases, however, a careful study of the situation would demonstrate that a great deal could be done in the way of unifying and transforming the ugly and jarring elements of a village street into a harmonious and pleasing group at a cost no greater than would be necessary to remodel and modernize the individual store fronts. Public service corporations, banks, realty firms and other firms and individuals interested in the growth and development of the community will be found most willing to contribute to the undertaking.

"So far as I know, the credit for initiating the movement for small town improvements should be given the village of Ojai (formerly Nordhoff) in the Ojai Valley, Ventura county, California. This community is so small it is not incorporated, has no local government and no means of raising money except by voluntary contributions. Fortunately it is most favorably situated in a beautiful valley at the terminus of a concrete highway, fifteen miles from the sea and the city of Ventura. Lofty and picturesque mountains hem it in on all sides and nature has embellished it with running brooks, giant oaks and semi-tropical flora. The only discordant note in the valley, the one blot on the landscape, was the business section of the village, a collection of nondescript and ramshackle buildings with ugly metal awnings, disjointed sidewalks and crude, staring signs. A partially wrecked livery stable and a dilapidated blacksmith shop occupied the two most prominent corners of the town.

"Mr. E. D. Libbey of Toledo, Ohio, a winter resident of the valley, possessed the foresight and imagination to realize the possibilities of unifying and beautifying the conglomeration at a surprisingly small expense compared with the result obtained. He appealed to the public-spirited residents and property owners to aid in the undertaking and by way of encouragement proposed to buy and deed to the community a beautiful tract of ten acres (an old hotel site) in the center of the business section, as a civic and recreation center and also to erect a post office on the site. The appeal met with instant cooperation and success. Each shop owner agreed to pay a certain pro-rata of the expense and the balance of the amount required for the improvements was contributed by property owners and business interests in the valley.

"The Spanish Colonial, or the so-called Mission style was decided upon as the logical and best adapted treatment for the regeneration. Within three months after the idea was proposed, the money was raised, the plans were completed and the actual work commenced. The construction is fireproof and permanent; hollow tile, reinforced concrete and stucco being the materials used.

"The accompanying photographs give a clear idea of the problems that had to be worked out and the results accomplished. The success of the venture has far exceeded the expectations of its promoters. Thousands of visitors have been attracted to the valley, business has shown a decided improvement, residents have been encouraged to improve their property and realty values have shown a marked increase. It is encouraging to note that new buildings under erection or contemplated are following the style and standard set by the improvements on the village street. A company has been organized and a high class tourist hotel conforming to this work is projected for the future.

MAIN STREET BEFORE IMPROVEMENTS WERE MADE, OJAI, CALIFORNIA.

ARCADE, MAIN STREET, OJAI, AFTER IMPROVEMENT
Mead & Requa, Architects

"The local benefits, however, are insignificant compared with the example set and the incentive given other towns to improve and beautify their surroundings."

* * * *

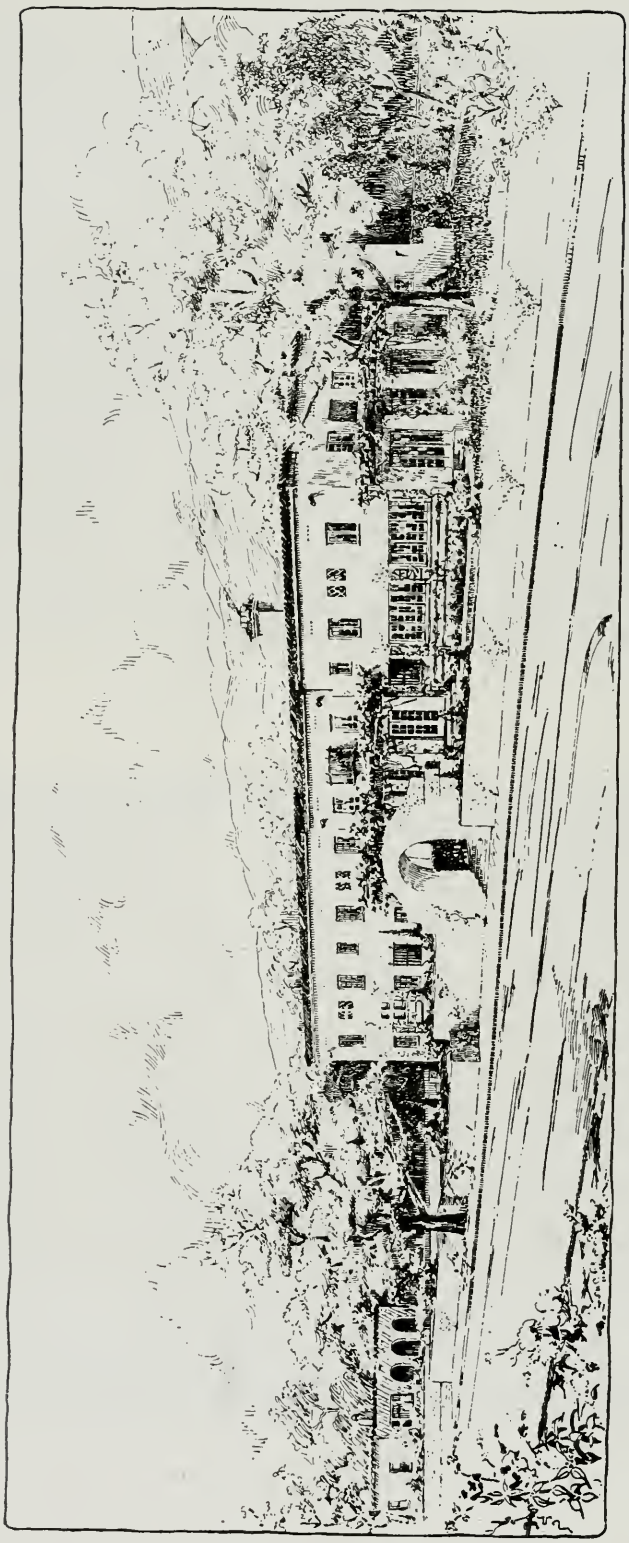
In designing and planning the village hotel or tavern for Ojai, the special problems to be given careful and special consideration and study were: a building thoroughly modern and up to date and meeting the requirements of the discriminating traveler; a plan and arrangement that will furnish suitable accommodations for the commercial man, the casual visitor and the tourist, and also provide a pleasant, restful home for the guest who desires to extend his sojourn over weeks or months; a structure that will be sunny, warm and comfortable during the cool days of winter and also be cool, airy and restful during the heat of summer; a design conforming and harmonizing with the present civic improvements, of which it forms a part; and providing by means

POST OFFICE AND TOWER, CIVIC IMPROVEMENT FOR OJAI, CALIFORNIA
Mead & Requa, Architects

SIMPLE TREATMENT OF ITALIAN PERGOLA, CIVIC IMPROVEMENT, OJAI, CALIFORNIA
Mead & Requa, Architects

RESIDENCE OF MR. O. W. ROBERTSON, OJAI
(Inspired by the community improvements)
Mead & Requa, Architects

ST. THOMAS CATHOLIC CHURCH, FORMING A PART OF THE OJAI CIVIC IMPROVEMENTS
(A parish house, with connecting arcade, and a property enclosing wall will be built later)
Mead & Requa, Architects



TAVERN FOR OJAI, CALIFORNIA
MEAD & REQUA, ARCHITECTS

COUNTRY HOUSE OF MR. H. T. SINCLAIR, OJAI
(Conforming to the work of civic improvements)
MEAD & REQUA, ARCHITECTS

ENTRANCE TO PARK FROM MEN'S CLUB HOUSE, OJAI, CALIFORNIA.

MEAD & REQUA, ARCHITECTS.

of treillage, pergolas and broad, plain wall surfaces the greatest facility for the growth and development of the vines, plants and shrubs so essential for maintaining the verdant charm and country atmosphere of the village.

Before the plans were started, the most successful Southern California hotels were visited and hotel men of experience and authority were consulted, and the practical knowledge thus gained was used in developing a plan which meets in the highest degree possible, in a building of its modest size and cost, the needs and desires of the traveling public.

The very essential matters of light, heat, ventilation and view were carefully considered and adequately worked out. A large, comfortable, homelike lobby and out-door sitting room have been provided to tempt the guest to prolong his stay. The dining room has been made especially airy and attractive. The two sides of the room facing east and south are practically all glass, looking out upon an interesting California garden and commanding a most fortunate view of the post office tower, the park, the pergolas and arcades of the main street and the wooded hills beyond. The entire east side opens, by means of French windows, onto a generous pergola-covered terrace, shaded and sheltered by a large spreading live oak.

The building and the enclosing garden walls have been designed in the spirit of the early Spanish Colonial and California Mission architecture to fit into and form a part of the already completed civic improvement scheme. The main features are the plain, modeled, plastered wall surfaces, dull varicolored roofing tiles; quaint, overhanging balconies, interesting window lattices and grilles and rustic log-covered pergolas, all so reminiscent of the early Spanish inhabitants and fitting so harmoniously into its semi-tropical environment. A simple, yet imposing Mission arch breaks and relieves the straight lines of the enclosing garden walls and serves as the main entrance to the grounds and the tavern.

Highways, Byways and Hedges

Some Suggestions for Humanizing Our Country Roads

By NEAL T. CHILDS, Landscape Architect

THE era of great road building in the United States is with us. Nature has given to most of our highway routes magnificent backgrounds. It remains for us to see what touches are needed in the foreground to complete the picture and possibly relieve a little of the monotony that is inherent in the most magnificent of natural landscapes.

What our highways need, as our railways have always needed, is that artistic touch at intervals along their course—that charm of "the different" that makes travel among the older civilizations so interesting.

One of the most pleasurable things about travel in Switzerland or the Austrian Tyrol or the English Lake country is the unexpected that is constantly greeting one by the roadside. At intervals one encounters a bridge of good design in native stone, spanning a mountain torrent; a cleverly conceived wayside drinking fountain; a bit of well-tended leafy wood shading a picturesque rest-station; and always at the end of the day's journey, the clean, hospitable, moderately priced inn—the human touch along the highway.

Dr. Johnson, who had much of this world's wisdom, once remarked to Boswell (who was expatiating on the pleasures of the country), that he would not give a damn for the finest landscape in the world if it did not have a good inn on it. One of the prime requisites of the American highway is attractive inns at moderate prices. Our cities abound in palatial hotels, but good country inns are few and far between.

The country hotel with its one comb, fried pork and a bar, have been about all that we have had to offer the traveller between the larger towns. What opportunities there are for a chain of inns, say, down our western coast; a chain of picturesque hostelries that would delight the soul of a Harvey or a Flagler!

Imagine, gentle motorist, a great log house set in the dim cool of the firs and ferns of Oregon; a low-lying, open-courted patio house to greet you after a scorching day in the brown and burning inland valley, or a fine half-timbered tavern with a terrace, crowning some oak-dotted knoll along the foothill boulevard.

Such hostelries as these—providing clean, comfortable beds; plain, wholesome food; novel and attractive surroundings, will delight the motorist, the hiker, and, aye, the aeroplanist.

And every inn must have a garden. Not the conventional hotel gardens of a palm and geraniums set in dazzling array against whitewashed stones, but a garden that fits the inn.

A California girl recently travelling in rural England, writes thus:—"We heard it a rule that an inn with a garden was a good one, and we found it so." What the average hotel with us lacks is intimate interest in its environs. A wealth of opportunity lies at the hand of both the management and the landscape designer in making the surroundings of the wayside inn attractive to the tourist.

For the rustic cabin inn or chalet of the Oregon firs or the California redwoods there is a splendid opportunity for wild gardening. The using of the native shrubs, ferns and flowers in those subtle, picturesque plantings that we are just beginning to appreciate!

NORTH GEARY AVENUE, POMONA, CALIFORNIA

PINE HILLS DRIVE, BETWEEN JULIAN AND PINE HILL INN, SAN DIEGO COUNTY, CALIFORNIA.

A STRETCH OF UNPLANTED HIGHWAY, SONOMA COUNTY, CALIFORNIA

A STRETCH OF PLANTED HIGHWAY, SONOMA COUNTY, CALIFORNIA

APPROACH ROAD THROUGH BEAR MT. PARK TO BEAR MT. INN, FIFTY MILES FROM NEW YORK

The patio of the Spanish Inn in the hot interior valleys presents abundant opportunity for the use of water in pools and jets and wall fountains, reminiscent of the gardens of Old Spain. Here also is chance to delight the tourist with a correct historical use of the wealth of semi-tropical flora which blossoms under the California sun. The palm, the apunta and the pomegranate may greet the traveller in such a garden.

Surrounding the English and Colonial inns, besides the traditional flower garden, there may be laid out naive little rock and bog gardens; heath and water gardens—types uncommon with us, but keyed to provide much of surprising and sustaining interest for the sojourning guest—particularly for the women and children. For the men, a convenient bowling green, a putting green, a tennis court and a swimming pool.

A CALIFORNIA HIGHWAY LINED WITH PEPPER TREES

PINE HILLS INN, SAN DIEGO COUNTY, CALIFORNIA
A suggestion of what we should have in greater number

For the mountain inn—a comprehensive system of well-named, well-marked trails, of easy grade, leading along delightful woodland ways, opened here and there to afford distant views, and culminating in some comfortably appointed and interesting feature.

There is need for these types of highway inns—inns with grounds in refreshing contrast to the heat and dust of the road, and packed full of pleasing and interesting features. Already there are rumors that there is to be a beginning of such things. So let it be!

For those who wish to camp—and the name is legion—we must provide camping places along the highway. The confirmed California camper, who, once when the crops were in and the valley burned brown, loaded ma and the kids and the Dutch oven into the farm wagon, and hit for the high hills, now does the same in a Ford.

LOBBY, PINE HILLS INN, SAN DIEGO COUNTY, CALIFORNIA

These pneumatic nomads seek camp-sites on the edges of the valley towns and are best provided for by well-designed municipal camp grounds. The municipal auto camp ground should be a feature of highway improvement. They should be convenient and commodious for the auto camper, and at the same time not a nuisance to the regular resident.

Their chief requirements are ease of access and egress for a number of machines, reasonable privacy for each party, convenient washing, cooking, lighting and sanitary facilities. In addition, there should be abundant shade, possibly an amusement feature, and a landscape setting that will be a credit to the town.

A series of camp grounds so conceived and so ordered, should appeal to the commercial and civic sense of our communities, and do much to develop that social spirit that has been the heritage of the highway in every land. In addition to the permanent camp grounds maintained by the municipalities, the counties could maintain small picnic grounds along the highway. These grounds to be located in picturesque nooks and designed and equipped so as to blend into, rather than deface, the natural surroundings of the spot.

Some rustic tables and benches, a supply of water, a rough cooking range, and a receptacle for garbage would constitute the equipment. A patrolman or ranger could be employed to look after the upkeep of such spots, and meet and help the tourists to maintain fire and sanitary precautions. Such picnic grounds, well located, artistically designed, conveniently equipped and supervised, will provide a distinct feature along the highway.

To the beautification of the highway rights-of-way themselves we have a large and splendid task, once we set our hand to it. It is a thing to be done, not in a spasmodic or haphazard way, but in a comprehensive and thoroughgoing one. As we conduct the surveys and pour the concrete for the splendid ribbon roads that we are winding among the hills and valleys, so must we order their planting. The beautification of our highways should begin with a survey to determine just what conditions of climate, of rainfall, of soil, prevail along the various roads.

We know that here upon this coast we have within the confines of one state, the greatest diversity of meteorologic conditions that that master showman, God Almighty, ever assembled upon one stage. We have in that glorious realm stretching from British Columbia to old Mexico, examples of the wettest and the driest, the hottest and the coldest, the highest and the lowest physical states that are possible. These diverse conditions through which our highways pass will have a determining effect upon what breed of bush we plant along the course.

The mountain chestnut or chinquipin, that is but a shrub on the Wawona Road, is a tree 150 feet high in the coast ranges of Siskiyou. The feathery mountain hemlock (tsuga mertensiana) that spreads the delicate green of its feathery tips along the cloud-kissed trails on the slopes of Shasta, would moult and melt away under the mid-day sun at Modesto The Oleander, that blights and blooms so niggardly on the Berkeley Bay shore, bursts full blossomed in the Livermore Valley.

These are the things we must know before we make our planting plan for our highways. But because each portion of our highways will need a different horticultural treatment is no bar to setting about the task, for, happily, Nature has a plant for every site.

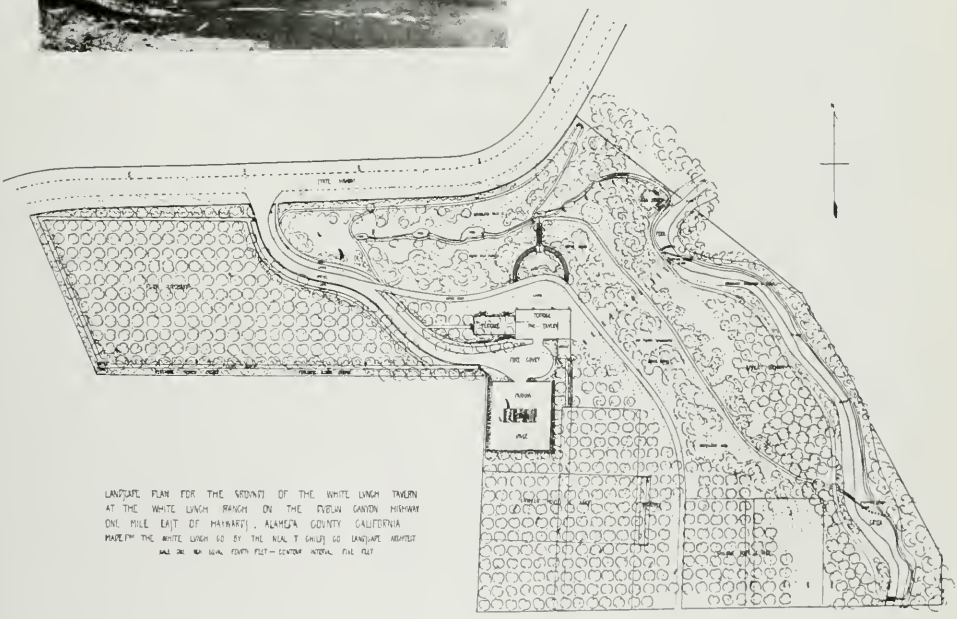
The character of the planting along the highways will depend upon the general nature of the region through which the road runs.

Trees should be used as the major element in the plantings. The elms, pines, maples, oaks and birches along the northern roads. For the Central

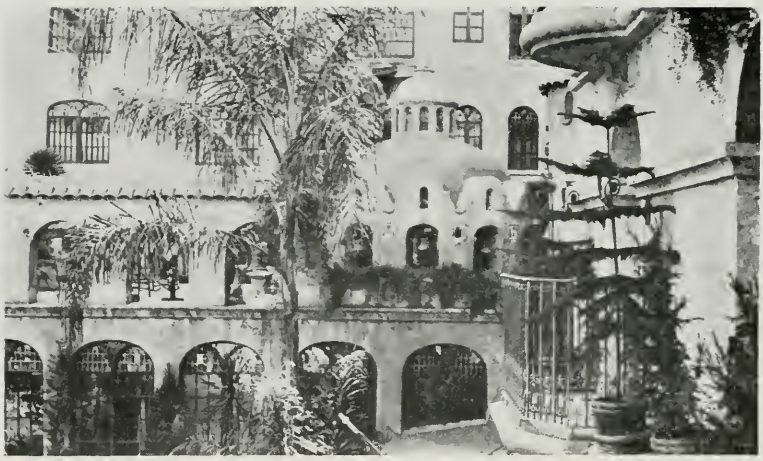
PRELIMINARY SKETCH OF SERVICE FEATURES - GARAGE PARKING WAY, CHICKEN HOUSES ETC - FOR A COUNTRY INN FOR THE WHITE LUNCH COMPANY
NEAL T CHILES CO LANDSCAPE ARCHITECTS

ECONOMIC SERVICE FEATURES DESIGNED TO ACCOMPANY A HIGHWAY INN AND SUPPLEMENT ITS SOCIAL AND ARTISTIC PURPOSE

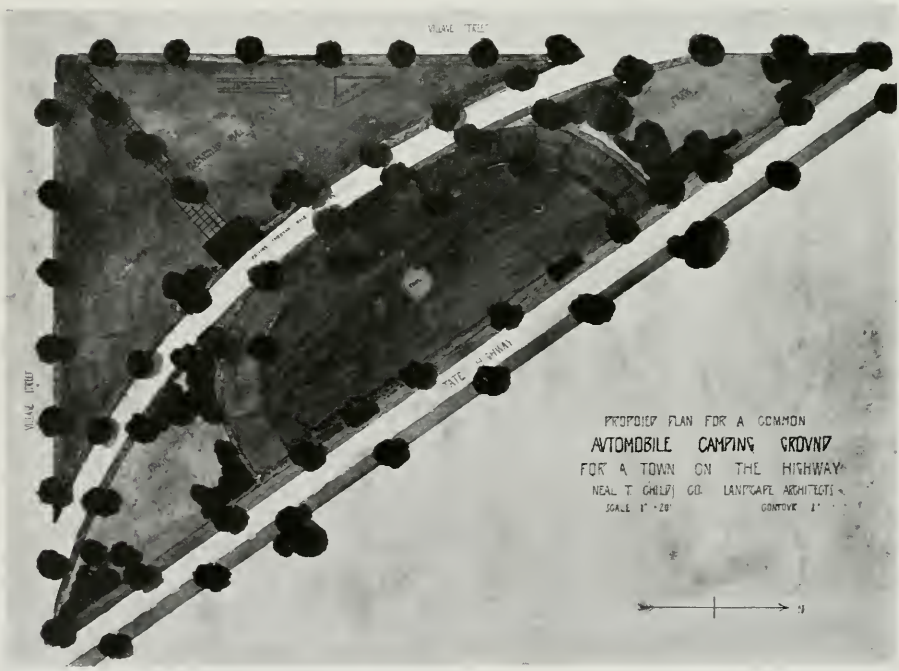
APOLOGY FOR
A HIGHWAY HOSTELRY
OF TODAY



LANDSCAPE PLAN FOR THE GROUNDS OF THE WHITE LUNCH TAVERN AT THE WHITE LUNCH RANCH ON THE EVELYN CANYON HIGHWAY ONE MILE EAST OF HAYWARD, ALAMEDA COUNTY CALIFORNIA
MADE BY THE WHITE LUNCH CO BY THE NEAL T CHILES CO LANDSCAPE ARCHITECTS
SCALE ONE INCH EQUAL FORTY FEET — CONTOUR INTERVAL FIVE FEET



WHY NOT MORE OF THIS TYPE OF HOTEL IN OUR WARM INTERIOR VALLEYS?



A MUNICIPAL AUTOMOBILE CAMPING GROUND IS AN ASSET AND A CREDIT TO ANY HIGHWAY TOWN

Coast region any of those mentioned above, together with the best of the Eucalypti and Acacias, are desirable; while for the Southern highways, the semi-tropical palms, peppers, etc., are suitable. That arboreal exclamation point, the Lombardy Poplar—suggestive of French highways and Corot paintings—should be used with moderation. They should be used as high notes here and there in the scheme.

The highway tree planting should not be confined to double lines of equally spaced trees, like soldiers in a row. The planting should be broken here and there into picturesque groups, thus avoiding monotony, and giving distinctive character to a given strip of road.

A road is in itself a rhythmic thing, as it rises and falls, winds and turns over hill and dale. It is this rhythmic quality that makes possible very harmonious compositions of plant materials along its course

Much use should be made of shrubs. Nothing takes off the bareness of a highway and gives a friendly feeling like well grouped shrubbery. Particularly should those shrubs that flower over a long period and are quite drought resistant be used in abundance. The various varieties of flowering brooms, cassias and bottle-brushes are suggestive.

"Roses, roses all the way"—not quite—but planting of them, both bush and climber, there may be where rainfall conditions permit. Banks of creeping Cherokees, Rugosas and Wichuraianas, garlands of them on chains strung from tree to tree; and at intervals, archways of them in pendent pulsing bloom. All these are possible in a well planned highway beautification scheme.

The use of herbaceous flowering material for highway planting will be conditioned largely upon the possibilities of irrigation. Of the hardy, self-sowing perennials, like poppies, lupins, verbenas, creeping phloxes, helianthemums and portulacas, we may have veritable Persian carpets along our roads.

The latter effects may be obtained much as they are along the railroad rights-of-way in Norway and Sweden by intelligent and generous seeding during the rainy season.

Save only the hearth, a road is the most human of institutions. They are the leading strings of life, the woof on which the web of civilization is woven. They were our first Movie films. They are the cords along which the throb of life is felt—the symbol and synonym of life itself.

And the record of a nation's culture is written along her roads. Rome's military glory is enscrolled upon her highways; England's romance of coach and inn is written along her highroads; France's song of romance from Roland to Verdun runs along her matchless ways. Much of *our* story will be written along *our* highways. They will become more and more an intimate part of our social life. Let us see to it that they are made pleasant as well as useful pathways, and that the story that we write along their byways be good reading for those who follow after.

* * *

He Was Wise

"When do you think my house will be finished?" asked the owner, of the contractor's foreman.

"The first of October," was the reply.

"You mean September," asked the owner.

"No, sir," replied the foreman, "I meant what I said—October."

"But there is no such month," said the owner.

"I know," was the reply. "That is why I said it."

A WELL PLANTED PORTION OF STATE HIGHWAY, SAN MATEO, CALIFORNIA

Adornment of Our Public Highway System

By DONALD McLAREN.

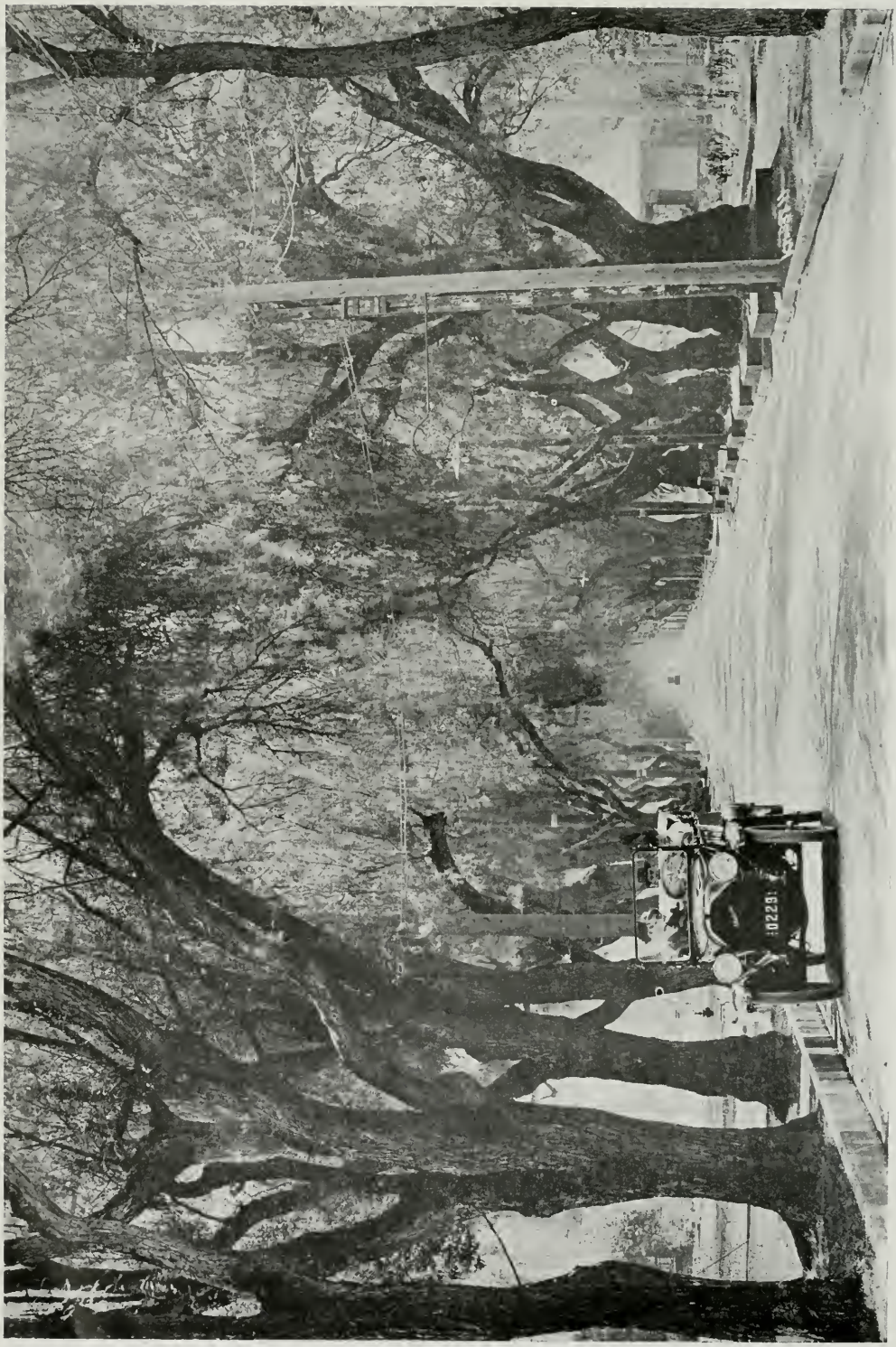
WHILE the subject of Good Roads has become in the last few years of vast importance and of vital interest to town and country dweller alike, not alone in our own state of California, but practically throughout the entire nation, there is one angle which we on the Pacific Slope have practically, except in a very few isolated cases, entirely, or partially, overlooked. I refer to the planting of suitable trees along our public highways. Recently, it is true, occasional mention has been made in passing that this work should be more generally undertaken, but there has been no concerted action taken with reference to making the matter of public interest as should be done, for I very much fear that unless we do get together with this end in view that we will receive the condemnation of the next generation for our lack of foresight in not providing suitable plantings throughout the entire length of our great highway system.

Trees, in fact all plant life, are grown so easily and at so little expense in nearly every section of the state that it appears almost criminal for us to neglect so important a feature as this matter. We are building a most marvelous highway system and one of the best arguments advanced for so doing, in addition for our own comfort and convenience, is the added attraction which they will prove to the tourist and traveller from other parts of the country. Why do we not stop and consider how wonderfully great would be the additional attraction, which it would be, if our country waysides should be properly planted, affording as they would additional beauty to the landscape and in many instances a grateful and very necessary shade? Contrast the difference between travelling fifty miles through our Sacramento or San Joaquin valleys as they are at the present time, practically treeless, and in many cases most monotonous, with what a pleasure it would be if the highways were lined with continuous shade trees, giving beauty and, especially in the hot summers, a pleasing and comforting shelter from the torrid sun.

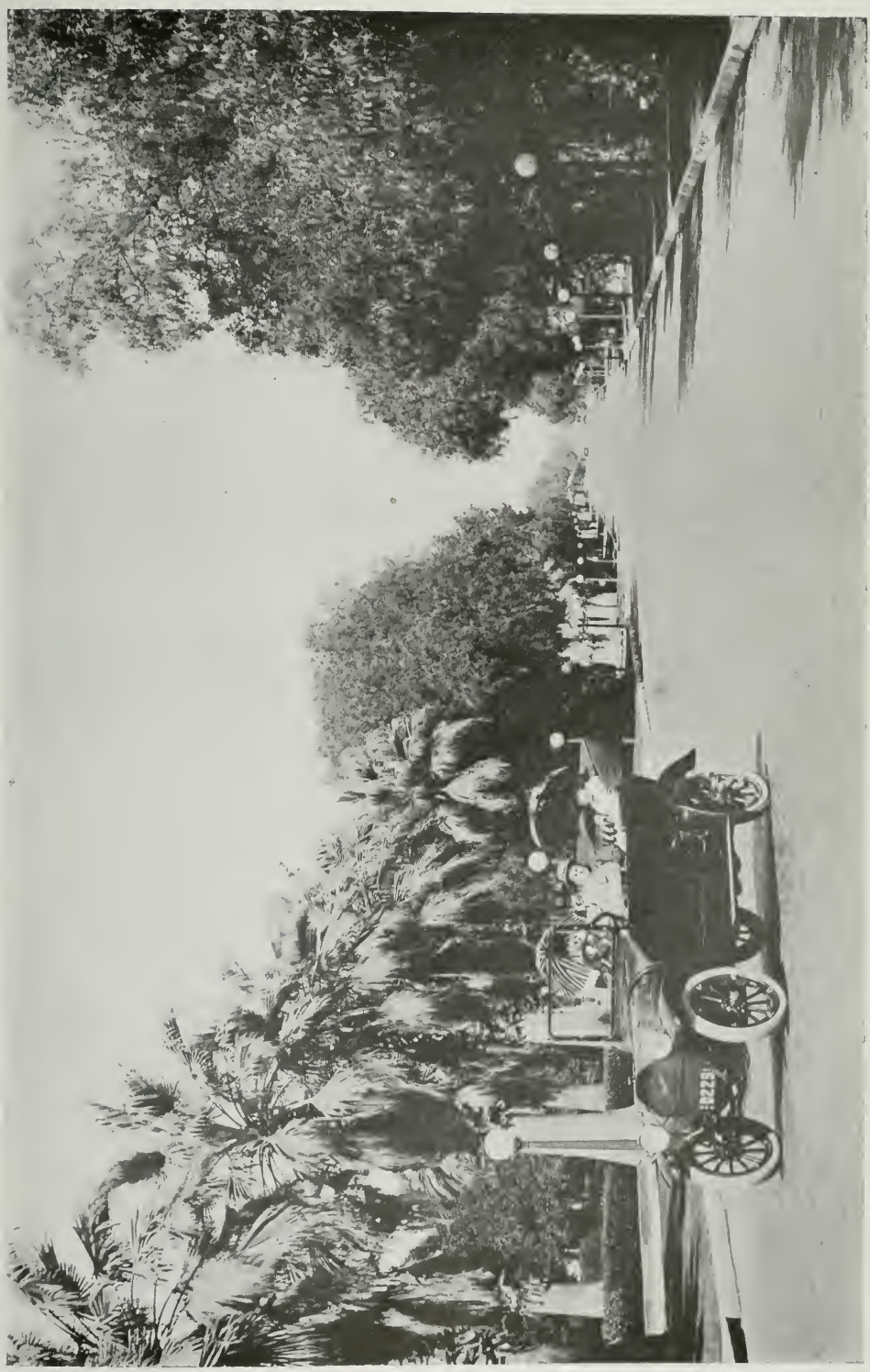
Travelling through an open treeless country is a very monotonous and tiresome experience, particularly in a hot, dry climate. Contrast this experience with a journey through a wooded country and mark the difference. One is a joy, the other a task.

This is preeminently the age of travel, and public conveyances have gradually increased. Trolley cars and jitneys carry eager people to all parts of the life-giving country, and the line of travel should be made attractive and interesting. One will notice beautiful things and draw attention to them, so that people who otherwise would pass along without noticing these beauties will have their eyes opened and their minds broadened to the charms of nature. We all enjoy travelling along a road, even if it be fifty miles in length, if the country is wooded or lined or grouped at intervals with shade trees, whereas if the country is open and devoid of shade or of trees, even ten miles of travel will become tiresome and monotonous.

Contrary to the general belief, the expense in connection with this very vital and important work would be a mere nothing when we consider what we are spending and contemplate spending on our highway system. I venture to say that the utmost amount needed to plant the proper trees along a mile of highway would not exceed seven hundred dollars and in many localities half of that amount would be sufficient. The above figure contemplates a shade tree about ten feet in height and also would cover the necessary stake, cost of labor, etc. Naturally, the cost of providing these trees would



MARENGO AVENUE, PASADENA, CALIFORNIA



ORANGE GROVE AVENUE, PASADENA, CALIFORNIA

depend entirely upon the locality and the variety of tree adapted to same, which would be governed absolutely by climatic conditions, soil, etc.

To my mind, this question of planting should be handled entirely by the State Highway Commission, but at the same time should be under the superintendence of a man thoroughly familiar with all our varied soil and climatic conditions—one used to our peculiar phase of summer scarcity of rainfall, etc., for no stranger, however familiar with plant life, could hope to carry on this work intelligently. Trees should be selected with the end in view that after a year or two they would be enabled by their very nature to take care of themselves and continue in good condition. We have many native trees which are well adapted to this work and which are among the most beautiful in nature. What is more beautiful or hardy, in suitable environment, than our native black walnut, which is at the present time used very extensively along many of our country roads and is growing luxuriantly? All of our pines and cypress are adapted to this use wherever conditions should warrant their being planted.

In all of our interior valleys, owing to the extreme heat of summer, it is advisable to plant the trees in regular lines so that in time they will form shade and give protection from the hot sun, while on the other hand, in many of our coast counties, it will be found advisable to plant the trees in groups so as to allow vistas across the valleys. This latter, of course, will give a more beautiful effect than if the trees are planted in straight rows, and will add charm and beauty to the landscape, but, as stated above, is not recommended for work in the hot valleys.

After determining the avenues or groves to be beautified the next consideration is how to prepare the ground, and I would advise plowing and sub-soiling the entire area. If a row of trees is to be placed along the public road, plow a strip at least ten feet in width the entire length. Place a stake for each tree about twenty-five feet apart in the row, dig a hole four feet wide and three feet deep, leaving it open. A stout stake for each tree should be procured and set in the bottom of the hole. The trees should then be brought on the ground and carefully planted by experienced men, selecting the finest top soil to place about the roots. After a hole is filled a basin-shaped space should be left open and the tree given a thorough soaking with water to settle the soil about the roots. The tree should then be pruned if necessary and securely fastened to the stake by a stout tie in at least two places. Water should be given in abundance at least once a month during the first summer, in fact it is necessary to begin watering in April unless the weather is very wet.

In closing let me most earnestly urge the vast importance of this tree planting problem, for as stated above it is a matter which will be appreciated generations hence, and the sooner the work is taken up the sooner will the results be obtained and the work appreciated.

* * *

The Housing Question

A house hunter saw an advertisement in the paper describing a charming house "within a stone's throw of the station." He made an appointment, and in due course was walked to the house in question, two miles away. When they reached the threshold he sank down on the step, turned to the agent and whispered suavely: "Would you mind introducing me to the person who threw that stone?"

Ideals of the Profession of Architecture*

By HENRY K. HOLSMAN,
President Illinois Chapter, American Institute of Architects

IF I were to take as a text a great philosophical thought—a thought typical of our individual professional lives, typical of our professional organization and typical of that age-old professionalism hitherto unorganized and unconscious of its power, but just now reaching class consciousness; if I were to use a phrase most typical of the value of that great creative, cumulative service of the minds of men for their fellow man, now coming to be known as world professionalism, I would say: "The first shall be last and the last shall be first and servant of all."

My present conception of the policy of this organization lies in that text. The most important goal of our organization, of our profession, of all professions, is class consciousness. The task is one for a class, not for an individual. The President must be conscious of his position as a servant. He may help to awaken the other individuals and guide them to an awareness of their duties, powers and responsibilities; but whatever is done that is true and good, whatever is achieved that is beautiful and therefore cumulative and lasting, must be done by the members of the organization or of the class and not by their servants, the officers. The character of a profession depends upon the character of its individuals. The reputation of a profession depends upon its organization and the participation of all in its welfare.

The architect inherits a profession built upon the oldest instincts of man and handed down from the remotest periods of history. His profession is the one great accumulation of experiences and forces imbued with the spirit of art, and art is a development of the people, as a class, for the people as a mass, and cannot be created by an individual. No new form or color invented by an individual (if such a thing is conceivable) can be called art unless it raises to the consciousness of the beholder past pleasures of the mind or familiar instincts of the race. He who would be an artist must serve his people with an emotional understanding of them, of their past.

The profession of architecture imposes upon its members the same familiarity with the achievements of structural and social sciences. The architect must work in close cooperation and deep sympathy with other professions than his own. No individual can achieve in this profession by himself. Architecture does not depend upon the inspiration of genius but upon painstaking culture and talent and the mastery of the principles of the arts and sciences accumulated from all the ages, from men of all professional classes who have worked and thought along social, structural and aesthetic lines. Architecture is a social phenomenon, not an individual phenomenon.

That our profession is the oldest, the broadest and the last to come to consciousness is at once our opportunity and our responsibility. Being in sympathy with so many other professions it becomes our obligation to wake up and help to prepare for that day of full professional consciousness when men of all classes, from the humblest trades unionist to the exalted statesman, will ask and receive of the treasures laid up in professionalism. Class consciousness is the chief reason for the existence of any professional organization.

The world is fast becoming aware of the great value of the professional man. He is the man who stands ready to serve other men in their health and happiness, in their organizations and enterprises, in all their conceptions and achievements. What great commercial enterprise or what mighty utili-

* Inaugural address delivered by Mr. Holsman, when he took the chair as president of the Illinois Chapter for the year 1919-1920.

zation of forces would have been achieved by the so-called masters of industry had it not been for the professional man who patiently and systematically worked it out, practically for the joy of achieving it; or what one of the great machine of finance or industry, or what government in war or peace could survive and develop, but for the continued devotion of the professional man? His services are not paid for in proportion to their value, and for some things he cannot be bought. He is born of the people; seldom, if ever, of autocracy. His equipment is inherited from society and he is the safest and most important trustee for the preservation and development of society the world will ever know.

We are now awakening to the dawn of a new era. The age of Kings and Princes is the past. The day of Barons and Aristocrats is waning, and the day of professionalism is at hand. Professionalism carries but one banner and written on that banner is but one word—Service. The law of its being is freedom restrained by culture, training and unbiased devotion to duty. The remuneration of its members is a known fee in proportion to the cost of preparation and the hazard of the undertaking, coupled with that distinctive mental exhilaration, known to no other calling—the joy of solving a problem that makes life still more worth living.

"And only the Master shall praise us, and only the Master shall blame;
And no one shall work for money, and no one will work for fame,
But each for the joy of the working, and each in a separate star,
Shall draw the Thing as he sees It for the God of Things as They Are!"

It is our chief duty to develop our organization, in order to develop our class consciousness. By serving with each other in close contact and fraternity we can develop an awareness of our combined strength and power. To belong is not enough—to participate must be the watchword. When we know each other as individuals, we can make ourselves known to society as a class. We may not have been first in war, but we can be first in peace. Let us stand by the professional ideal, to ourselves be true, and unite in one great body and one great purpose, to serve organized society everywhere within the field of our usefulness, with one great unselfish professional organization, the American Institute of Architects.

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Plymouth Congregational Church, Oakland

IN designing the Plymouth Congregational Church, Oakland, the architect, Mr. William Knowles, has deviated somewhat from the paths generally followed by ecclesiastical architects and instead of imposing columns and Gothic arches, he has used a simple treatment of interior arrangement, with the idea of providing the greatest possible room for the least expenditure. Mr. Knowles believes that the church is no longer a place in which to be awe inspired, but rather it is a place of instruction. The simple plan of the auditorium makes it possible to seat very comfortably 1500 persons. Considering that this church cost only $50,000 and that there are many other churches seating half that number of people and costing double, the Plymouth edifice is declared a remarkable example of economical church building. Besides the auditorium there are commodious Sunday school rooms and the pastor's study. The exterior of the church is pressed brick veneer and slate roof.

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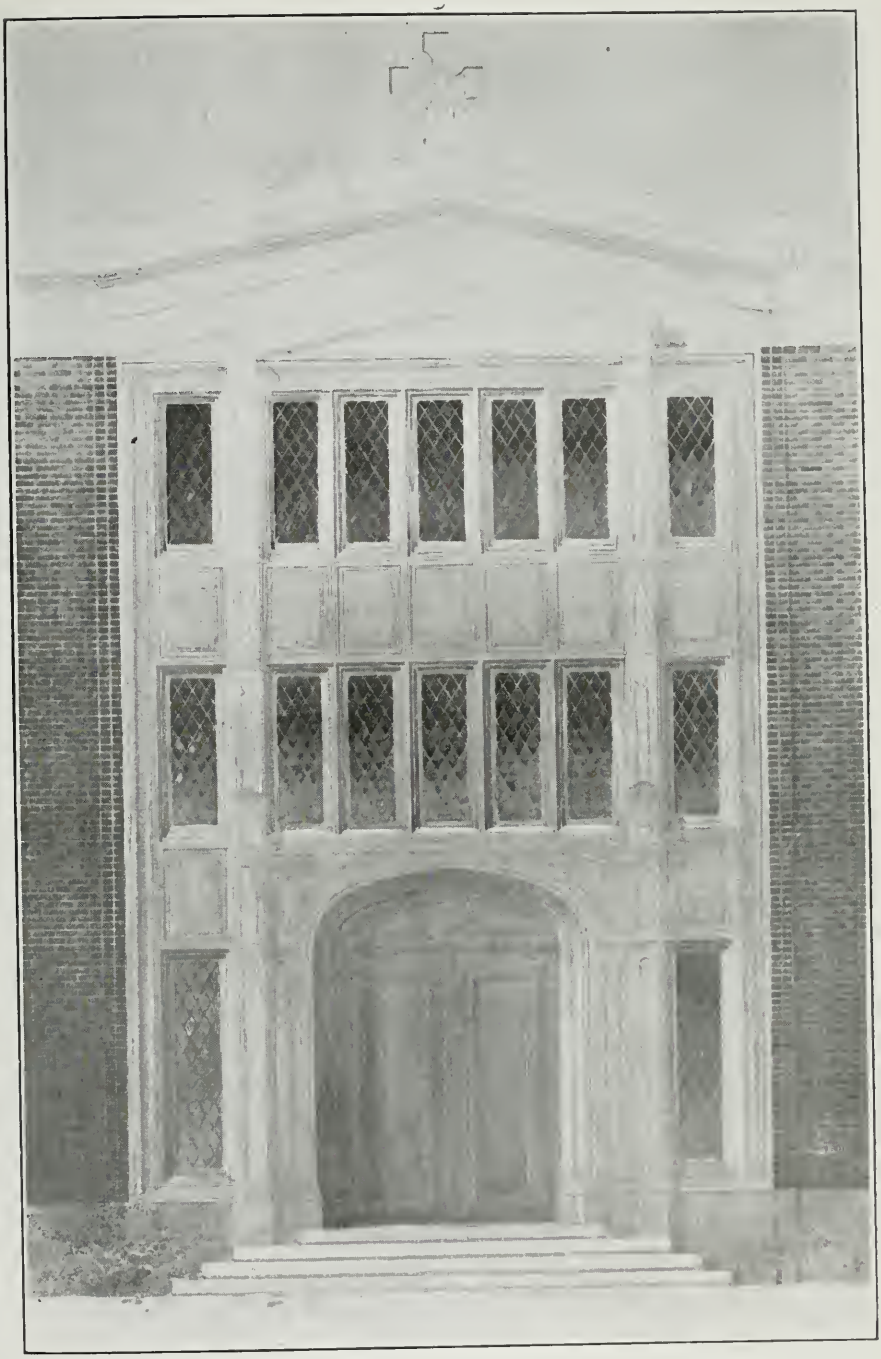
Other illustrations in this number include a striking Colonial house for Dr. Lincoln Cothran, at San Jose, designed by Mr. Warren Skillings of that city, and the new Christian church at Long Beach, by Mr. Robert Orr, architect of Los Angeles.



ENTRANCE, PLYMOUTH CHURCH, OAKLAND
WM. KNOWLES, ARCHITECT

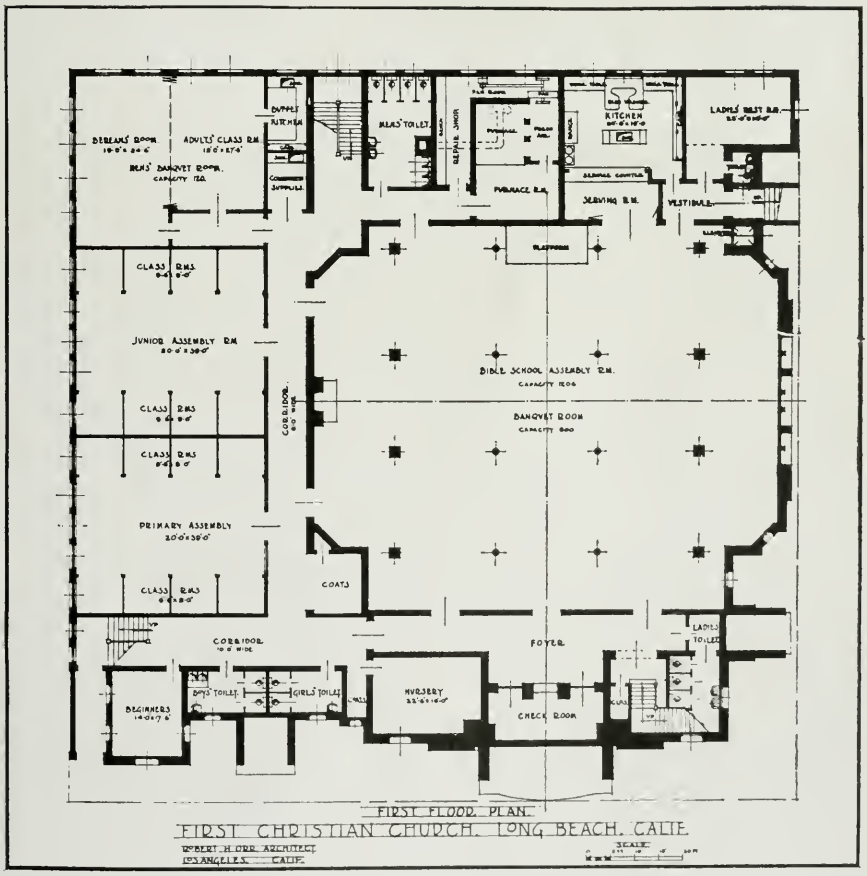
ENTRANCE, PLYMOUTH CHURCH, OAKLAND
WILLIAM KNOWLES, ARCHITECT

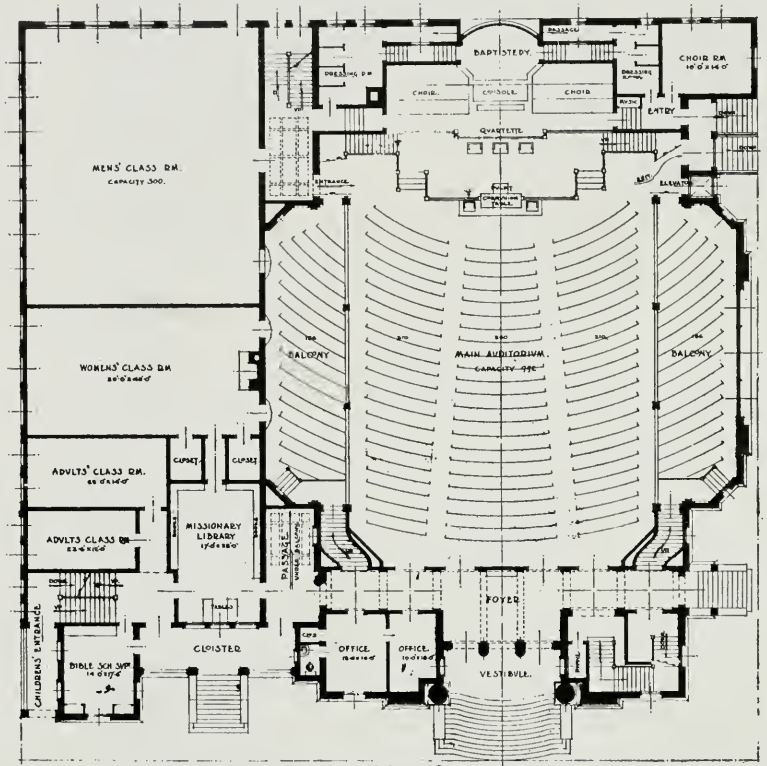
FACADE, PLYMOUTH CHURCH, OAKLAND
WILLIAM KNOWLES, ARCHITECT

CHANCEL, PLYMOUTH CHURCH, OAKLAND
William Knowles, Architect

INTERIOR, PLYMOUTH CHURCH, OAKLAND
William Knowles, Architect

FIRST CHRISTIAN CHURCH, LONG BEACH
Robert H. Orr, Architect



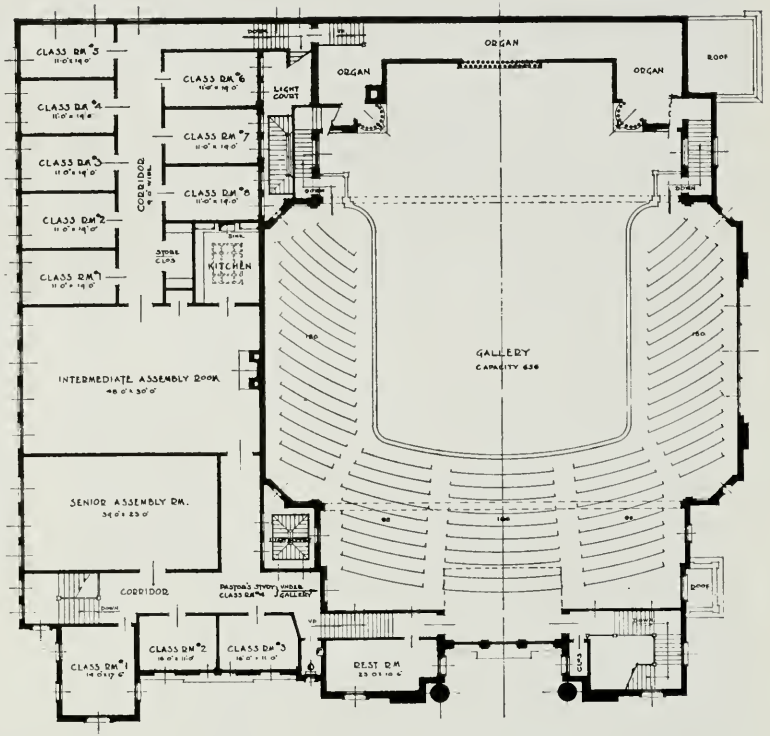


MAIN FLOOR PLAN.

FIRST CHRISTIAN CHURCH. LONG BEACH. CALIF.

ROBERT H. ORR ARCHITECT
LOS ANGELES CALIF.

SCALE



GALLERY FLOOR PLAN.

FIRST CHRISTIAN CHURCH. LONG BEACH. CALIF.

ROBERT H. ORR ARCHITECT
LOS ANGELES CALIF.

SCALE

"The House of Tomorrow"*

By CARL F. GOULD, Architect

ONE of the great impulses—outcome of the war—seems to be the desire of home ownership. The governments of England, France and the United States are now grappling with the problem of how best to assist in this great home building era that is about to become a reality. The department of labor is now working out a method of financing those desiring to build, a method in the nature of the farm loans. Preceding any great movement there must be a desire of accomplishment and today the most universal desire, the subject most talked about in the press and in conversation is home ownership. In spite of economic difficulties which momentarily seem to stifle the actual accomplishment, I feel confident ways will be found to offset the high cost of construction and that within a few years the world will see one of the largest outputs of individual homes ever produced in the history of the world. The government will go into partnership with the home owner, for there is no more certain co-partner than he. The nation which procures in the next ten years the greatest number of intelligent home owners is the nation that will lead the world in industry, stability and, we hope, spiritually. The transient worker with his family in a flat and the movies his diversion, and the alien from picturesque Europe in our cheap, ugly slums can be made patriotic and contented citizens more easily if they have a home and acre of their own.

The government realized this in the war. We have evidence of home owning communities in the past as evidence and it is one of the most apparent truths of human nature, the family unit stabilized in the right habitation fundamentally gives the most certain assurance of human stability and happiness. The world has so long been disrupted and torn with side issues, economic wastes of war, destruction not only of actual materials, but of men's faith, that the reaction is setting in. The first thought in men's minds after the tempest of destruction is the most constructive of all material and spiritual sides. Energy expended in Red Cross work most necessary and commendable is only corrective and preparatory to something else. Charity, necessary as it is, is only a means to an end, economics, government, law, police force, armies, are only to make the world so it can be put in order and its material resources utilized for the purposes of constructive civilization and centers itself more about the home than any other human agency.

Although the thought of men down the ages from the period of the cave dwellers to those of the most modern bungalow has been centered upon the home building, still the trained man of today is giving very little advanced thought to the home itself, its plan, its arrangement, its utilities, and their solution in the terms of the present home builder and his condition of economy, climate and social status. The design and equipment of the house should be subjected to the most careful scrutiny, the home should be studied in reference to its functions, its form, its utilities, with far greater care than it now is. The speculative builder procures some cheaply worked out plans from some overworked book on home plans, probably prepared by the son of a carpenter builder who happened to have a knack at mechanical drawing. The woods are full of these stock plans which are perpetrated in every town and city throughout this country. Something should be done to offset these extravagant speculative building projects. Seldom do we find among the innumerable subjects taught in our schools and colleges that of architecture of the home. Simons college in Boston and Teachers' college in New York and the Uni-

* Address delivered before Normal School Assembly, Bellingham, Washington, June 25, 1919.

versity of Washington are, as far as I know, the only institutions where this subject is taught as a clearly defined one. Such a subject properly taught should, we feel, add much to the value of the hundreds of thousands of houses that are to be built in the near future right here in our midst and throughout the country.

The study of historic evolution of the house will develop an intellectual background and aid much in critical judgment. Much of the value can be obtained from study of the Roman house, of which we have a fairly complete record. The colonial house offers much material, especially its unique plan and refinement of detail. In the study of equipment the historic angle again should be gone into. The history of plumbing, especially the tub, will prove enlightening. Heating also has an interesting historic background. It must be frequently shown that equipment does not make a home. A perfected bathroom and complete kitchen do not make a home. They greatly help, but they are means to an end. The colonial, it must be shown, has developed a far more homelike character to his home than we, although he had none of our so-called conveniences. His houses were not built for speculative purposes to attract a ready sale with clinkerbricks thrown out to catch the unwary, but they were built to serve and bring up a family and were to remain in the family. The house of tomorrow should be shown not to have less equipment than the most advanced house of today, but combined with electric ranges, instant hot water, etc., there shall be a character of homelikeness equal if not greater than that of the colonials. It should be shown how in this climate the entire side of a room could be of glass. Glass was expensive in colonial times; it is not so now. Who knows of a house where the windows are too large? In New England porches were a serviceable invention for shade in hot weather; here they only serve to darken the interior and unless made with glass roofs should not be used this side of the mountains. The fireplace is economy in supplementing the furnace or hot water heating. It also adds the greatest amount of charm to an interior, and about which family sentiment most readily is developed. Costs of construction, methods of financing, methods of procedure, in constructions should be gone into carefully. Above all interest in home and home life should be constantly kept before the students and they should be made to feel that the best human traits are matured in the best home surroundings. That the house should not only serve the physical needs, but in its arrangement, its simplest detail give expression to the homelike quality it is intended to express.

Mere intellectual discussion of the home will never serve to impress the student as will presentation of the subject by pictures and especially lantern slides. Visualization is a strong added factor in developing the subject. It is well to have open discussion and have the student before the class to analyze a plan, its good and bad qualities.

In no way, however, will discussion and pictorial presentation take the place of actual draughting exercises. This I consider the most important and valuable help in making permanent the thoughts developed by discussion. The very important and much unused power of visualization is thereby brought into play. Methods of teaching drawing so often develop a mind that looks at a line as a line and not what it represents, that great care must be taken at the start in these exercises. Consequently the very first exercise is a full written description of the student's own room, accompanied by a horizontal section or plan. He then under supervision draws his plan carefully to a definite scale with instruments and with the recognized architectural symbols.

The second exercise is a description of an ideal bed room, followed by a sketch and defined drawing in plan only.

The same method is followed for bathrooms and kitchens, each being previously discussed in class. Finally a plan of an entire house is given, followed by the student's ideal house plan. Fireplaces, stairs, cupboards, entrance doorways can be given as exercises in the same manner. That is full and stimulating discussion with pictorial representation by the teacher. A known object is selected, a paper written upon it by the student, a sketch and an accurate mechanical drawing made. The same to be repeated allowing the student to use his imagination in making his ideal solution. I find he learns quickly to read plans, a very real accomplishment, that is, he can erect in his mind an accurate workable picture from symbols in the form of a drawing in plan.

It is extremely valuable to have the students visit homes in process of construction and the most attractive one in the community to give him standards of taste. Such a visit should be followed up by description and drawing on the part of the student.

The keeping of an orderly scrap book adds much to the interest of a student and this work is entered into with a great deal of interest by all. I recommend the purchase of a copy of some well known architectural magazine from which clippings of good small house plans are made, Vanity Fair, House and Garden, but have them avoid inferior publications, of which there are many. Clippings of exterior and interior views of attractive houses arranged in sequence of the causes, houses arranged about a court, colonial plans, of modern or old houses, also the students should write for trade catalogues on plumbing, heating and lighting and give over a section to the equipment of this kind.

The garden and its relation to the house is also discussed and views of gardens add much charm to scrap books.

Should there be a wider interest awakened by the young people in the home and home life and its intelligent interpretation, I believe much would be done to give a more thorough satisfaction in living. A conscious and constructive interest in the home problem would add much to the development of the better things in life. The awakened interest in home building should be given intelligent direction and the schools and colleges should no longer neglect this fundamental subject.

* * *

Union Wages for San Francisco Draftsmen

Over the protests of the City Engineer, Mr. M. M. O'Shaughnessy, the San Francisco Board of Supervisors instructed him to recommend the union scale of wages for draftsmen and others in his department, through the Board of Public Works. At the same time the Supervisors agreed to provide the money to meet increases.

This further step in the long row between the Finance Committee and labor organizations merely committed the Supervisors to the policy of paying the union scale as a minimum. The City Engineer said that he objected to outsiders telling him what he should pay in his department and demanded the right to distribute the money as he saw fit.

It is stated that there are in the Engineering Department certain employees who would not be worth even the minimum to the city, and the City Engineer is paying them a low wage. However, he cannot discharge them, on account of the Civil Service Commission, he says, and as they are not worth, he says, what the labor representatives say is the union scale, the Engineer declines to adopt that scale.

BUILDING FOR SACRAMENTO BANK
AND FORT SUTTER NATIONAL BANK
WEEKS & DAY, ARCHITECTS

Sacramento's Tallest Office Building

THE new building for the Sacramento Bank and Fort Sutter National Bank, to be built at Seventh and K streets, Sacramento, will be of granite and terra cotta, using pure classic detail in the design. The building will be eighteen stories high and similarly treated on all four sides, rising as a monument to the banking interests of Sacramento.

The lower stories will be occupied by the bank and the upper stories by offices for physicians, dentists, attorneys and other professional men. There will be a Safe Deposit department for the bank in the basement. Messrs. Weeks & Day of San Francisco are the architects.

* * *

The Cement Gun and Its Product "Gunite"

By R. EWART CLEATON, A. M., Soc. M. E.

WITH the price of materials showing very little sign of decreasing, and the cost of labor decidedly the reverse, not only engineers and architects, but also contractors, are casting about for means of obtaining cheaper construction. The product of the cement gun, now familiarly known as "gunite," is receiving a great deal of attention in this respect, due to the satisfactory results that have been obtained from it during the last few years.

Although the aggregates of "gunite" and hand-applied cement mortar are the same, viz.: sand and cement, the characteristics of the finished product differ widely and are greatly in favor of the former. The two chief reasons are that "gunite" is hydrated at the nozzle, and therefore only as the material is being shot into place, thus obtaining the benefit of the whole of the initial set, and secondly, the material being applied by air pressure ranging from 35 to 50 lbs. per square inch, is much denser and enters into every pore of the surface to which it is applied, thus securing a far better bond.

Exhaustive tests have absolutely proven that "gunite" of a thickness of one inch is not only fireproof but water-proof, neither of which of course can be claimed for the same thickness, or even double the thickness of hand-applied mortar. Tests made at Washington, D. C., by the Bureau of Standards and at the Lehigh University by Professor Frank P. McKibben, have established the fact that the relative strength of "gunite" and hand-applied mortars or concrete are as follows:

	"Gunite" (average of samples)	Hand placed 1 : 2 mortar
Compressive strength lbs. sq. in.	4,145	2,184
Modulus of Elasticity lbs. sq in.	4,278,000	1,538,000
Tensile strength lbs. sq. in.	690	142

Besides its intrinsic merits, "gunite" possesses the additional advantage of very materially reducing the costs for labor on the work on which it is used. For example, on wall work, practically no form work is required, thus making it possible to dispense with carpenters and eliminate the heavy cost of lumber for the forms. An example of this class of work is the large machine shop recently built by the Traylor Engineering and Manufacturing Company at Allentown, Pa. Over a framework of steel "gunite" was shot on 2-inch mesh, No. 16 gauge expanded metal. The panels were designed of uniform size, and the only forms required were three removable ones which were used alternately, and moved ahead of each other as the work proceeded. The thickness of the walls is 2 inches, and the total cost, exclusive of air, but including the expanded metal, was 17¾c per square foot.

This is practically the most expensive type of construction on which "gunite" can be used. A much cheaper form has been adopted by the Ontario Hydro-Electric Commission in connection with the various construction camp buildings on the Chippawa Creek development. In this case the majority of the buildings are of wood; tar-paper and poultry wire of 2-inch mesh, and No. 15 gauge were attached, and over this a 1-inch coating of "gunite" applied. The most recent building erected on this job has merely a wooden framework, to which the tar-paper and reinforcement are nailed and the "gunite" shot over. All these buildings have been proven weather-proof, the latter being used as a cement store, and are fireproof from the outside

Other uses to which the cement gun is being put are innumerable, but a few of them are as follows: Fireproofing of steelwork, stucco work, shipbuilding and lining, lining steel smoke stacks and acid tanks, repairs to masonry, mine work, tunnels, reservoirs, etc.

The ease and cheapness with which it can be operated is rapidly causing it to be looked upon as a standard part of their equipment by the more up-to-date contractors, whilst the superior qualities of "gunite" are appealing more and more every day to engineers and architects, as it becomes more widely known.

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Hotels and Apartment Buildings in Demand

MR. S. W. STRAUS, the investment banker, states that as a result of the shortage of servant labor, higher rentals and the increasing cost of all household supplies, a distinctively new tendency has developed in the building industry, which is manifested in an unprecedented demand for large apartment houses of the residential hotel type. Modern ingenuity has created this form of construction to the end that many of the objectionable features and inconveniences of the individual home are eliminated.

The servant problem has been a vexatious one for some time and is likely to become more acute with restricted immigration and a higher scale of wages in other lines of activity. The newly developed type of apartment hotel furnishes maid service and meals, so that in the family there is saved the inconvenience and expense of marketing, preparing meals and maintaining a kitchen. As the supply of household servants becomes more scarce and the density of population in our great cities increases, there will be a continued strong tendency toward the construction of apartment houses and family hotels.

In the principal American cities today, many of the most important building projects are hotels of either transient or apartment type. In the various complexities of modern life, it is becoming more necessary for people to travel, and people also are traveling more as a means of education and diversion. These conditions are reflected in a demand for better and more commodious hotel accommodations, which tendencies will continue with the development of better transportation facilities.

There was a time when a trip across the American continent was considered a long and hazardous journey, but the day will soon come when New York and San Francisco will seem like next door neighbors, for the airship is quickly annihilating distance, just as the telephone and telegraph have done. As a result of these various fundamental conditions, the present marked trend toward the growth of hotels of all types will continue to be one of the outstanding features of the building industry.—National Builder.

School Architecture

SCHOOL architecture—good and bad—was discussed by architects who have had considerable experience in school house designing, at the eighth annual convention of the National Association of School Accounting and Business Directors in Cleveland, May 20, 21 and 22.

Speaking of defects in school buildings, Mr. W. R. McCornack of the Cleveland Board of Education cited six general causes, as follows:

1. Architectural ugliness, due to poor design, an unfortunate selection of building materials, the lack of a proper setting for the building and inferior workmanship.
2. Buildings unsuited for their functions because the plans are so inelastic as to make it difficult and expensive to adapt them to the rapidly changing educational policies.
3. School authorities are not buying sufficient land for the proper settings for the buildings or to provide sufficient playground and garden area.
4. School buildings are costly because of waste and unused space, and because little attention is being paid to the double use of rooms.
5. The defects of artificial illlumination are quite general and even in the case of daylight illumination where the standard relation of an equivalent of 1/5 of the floor area in glass is followed, the wall opposite the window is usually poorly lighted.
6. School architects have taken very little care in the matter of sound deadening and should take advantage of the very wonderful advance made in the science of acoustics.

In tracing the causes which contributed to the preceding defects, Mr. McCornack pointed to the lack of cooperation which exists between architects and educators, and boards of education. Architects frequently are more interested in presenting a well-balanced facade than in making a useful plan. The school building should be planned to fit the curriculum and the architecture should fit the plan.

As a second cause, Mr. McCornack pointed out the lack of definite ideas on the part of school authorities concerning the actual amount of space and equipment required for a specific amount of instruction. School buildings are frequently uneconomical because the rooms are too large or too small, and the equipment is far too elaborate or inadequate.

One of the worst causes of defects is the atrocious method employed for making appropriations. Pure guesswork is used and frequently the person who determines the matter, is entirely mercenary in his proposals. The result is that frequently a building is reduced in size below the necessary requirements and is structurally cheapened simply because of the blunders in the first estimates.

In speaking constructively of desirable changes and improvements in school architecture, Mr. McCornack pointed out the need of making all school buildings complete for the academic and vocational education of children and of introducing facilities for physical training and play, and for the wider use of the building by the community. By means of a series of lantern slides, he showed the plans of one-story school buildings which are now projected for the city of Cleveland. These buildings contain large central halls instead of corridors, suitable for indoor play and games and usable as auditoriums and gymnasiums. The buildings are entirely of the one-story type, fireproof up to the roof and fully equipped for manual training, cooking sewing, a library center, etc. That the buildings are not simply a dream was proven by Mr. McCornack later in the afternoon, when he took the members of the association through a memorial school building which carries out in every respect, a typical plan which was projected on the screen.

The discussion of Mr. McCornack's paper brought out the fact that schoolhouse construction has risen enormously in cost in Cleveland and buildings of the type planned can be erected for no lower cost than $14,000 per class-

room. The building which Mr. McCornack showed, cost 34 cents per cubic foot and was built under war-time conditions during the fall and winter of 1918-19.

Mr. Wm. B. Ittner of St. Louis, argued against one-story buildings as the ideal form of grade school. He urged that the first cost for land is higher, the cost for heating is increased, and the administration is made more difficult than that of the multiple-storied schools. He designated the Cleveland undertaking as a most interesting experiment to be observed and studied with great care. Mr. George W. Gerwig of Pittsburg, in closing the discussion, suggested that as a matter of pure democracy, school boards are obliged to furnish as nearly as possible equal school accommodations in all sections of each city. He declared that it is questionable, from the standpoint of the democratic government, to give one section of a town a building which is so high in cost that the available funds of the school board must prevent the replacing of an outworn building, or the construction of a desirable new building in some other part of the town.

Mr. Frank Irving Cooper of Boston, closed the session with a paper on "Economies to be Gained in Standardizing Schoolhouse Plans." Mr. Cooper summarized the advantages which result from standardization and presented in detail the plan which has been followed by the Committee on Standardization of Schoolhouse Planning and Construction of the N. E. A., in arriving at a minimum standard. The study which this committee has completed in the past shows that well defined percentages of space are devoted in well planned school buildings to: (1) administration, (2) instruction, (3) accessories, (4) stairs and corridors, (5) flues, (6) walls and partitions. Thus, to illustrate, instruction never falls below fifty per cent of the total floor area of a well studied building and in many cases it is in the neighborhood of 57 per cent. The percentages and tabulations of the committee afford school boards an efficient measuring stick for judging plans submitted by architects and for determining the efficiency of existing buildings.

In the discussion of Mr. Cooper's paper, it was brought out that unforseen changes in the course of study or in the administration of a building affect its efficiency unfavorably. A building in Gary, Ind., was cited in which a room planned for locker purposes was turned into a print shop. A room two-thirds its size would have sufficed. It is not unlikely that in the course of time, the same room will be entirely too small for the printing department or for some other shop which is housed in it. It was suggested by Mr. W. B. Ittner that the best arrangement for school shops is a large open area in a one-story building which can be cut up by temporary partitions. The subdivisions can then be changed at will and can be made to fit the needs from year to year.

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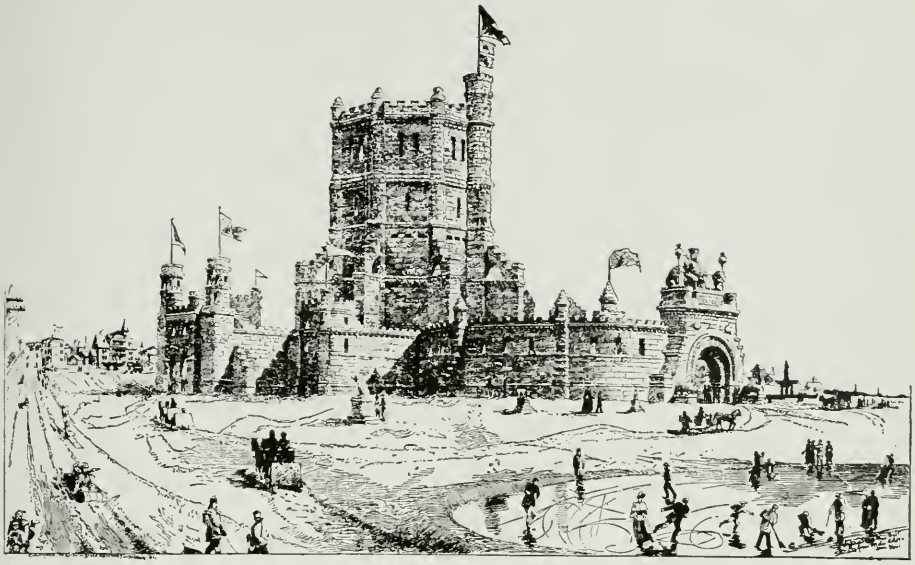
Two Los Angeles Skyscrapers

Los Angeles will have two more skyscrapers in the down-town or business section of the city. One—a twelve-story Class A office building—will be built by the Pacific Mutual Life Insurance Company at Sixth street and Grand avenue, at an estimated cost of $2,500,000. The plans are being prepared by Mr. W. J. Dodd, architect of Los Angeles. A second tall building, eleven stories in height, will be built by the Los Angeles Railway Company at Eleventh street and Broadway. This structure will represent an outlay of $500,000.



SKETCH FOR AN ICE PALACE
F. W. Fitzpatrick, Architect

Ice Palaces!

By F. W. FITZPATRICK

ALREADY there is talk of a proper and grand celebration of the anniversary of the Signing of the Armistice next year. That's a long way off, but we seem to be getting more into the attitude of "preparedness" for things rather than the mere "watchful waitingness" that prevailed some two years ago. 'Tis well.

New York naturally takes the lead in the matter and the suggestion is made that part of that joyous occasion's festivities should be a full-fledged Winter Carnival—if there's winter enough. Furthermore it is suggested that a very essential part of such a carnival will be a stately, artistic Ice Palace of mammoth proportions.

The first thought in my mind is that surely something absolutely new and more original and fitting could be devised for such an anniversary celebration. Do we always have to do something that has been done before? Have we such paucity of expression as it is claimed we have? Europeans always assert that we either shoot off firecrackers or eat turkey to give expression to all our gladsomeness. But perhaps such a thought occurs to me because of the fact that I was somewhat fed up on winter carnivals in my youth. For I fussed with carnivals from every angle, in Canada and then again later in Minnesota. I designed and actually built ice palaces, carved the sea lions and unicorns and things in ice, planned snow shoe parades, street festivals, costumes, the thousand and one details of such frivolities, all the hard work attending staging them and then never having had a minute to enjoy the fun and frolic of the occasion. Why, hang it, one time I even had wished on me the task of keeping a rather riotous mayor sober long enough to play the part of King Boreas—and I may add that it was one of the hardest jobs I ever had.

Writing of ice palaces also reminds me of the efficacy of a fib well told and of the power of the press.

In 1883 I went to live in Minneapolis. I had been in Canada where winter was *the* season: sports and a good time generally. Well, there was snow aplenty in Minneapolis; good snappy cold weather, all the requisites for sport, except the human one. By November all the fellows crawled into clubs and played poker, hibernated until spring thawed them out. I couldn't live that way. Another enthusiast was a young lawyer, and I talked it over with him. We decided something had to be done. We called a meeting, sent out invitations to all the likely young fellows and waited. Not a soul showed up! As we were starting for home a reporter breezed in to inquire how the meeting had been. My lawyer friend amazed me by getting off a long string of about seventy odd fellows having been there; great enthusiasm, my being made temporary chairman and there being an adjourned meeting called for the next Saturday evening at the Market Hall! The reporter bit, he wrote it all up nicely and there followed editorial comment. Other papers took it up and there *was* a meeting the next Saturday, hundreds of people present. The thing grew and grew. We went down to St. Paul and organized winter sports and clubs there. A winter carnival was decided upon, the railways, the hotels, the merchants subscribed heavily and winter sports and winter carnivals were all the go. Hundreds of thousands of people visited St. Paul, and the ice palace there was one of the chief attractions.

All this went on for three or four years; torch-light processions of clubs in full blanket regalia, attacks on the ice palace with rockets, curling bonspiels, skating contests, horse races on the ice, skeeing, toboggan sliding. Why, we became sportier than they ever though of being in Montreal or St. Petersburg.

Then came a time when, and with reason, it was concluded that winter carnivals and ice palaces were not good advertising for the West. The world over Minnesota was known for those ice palaces and carnivals and naturally that emphasized the fact that it must be cold. So they switched off to summer carnivals and corn palaces as better advertising for the State's agricultural and manufacturing advantages.

But the winter sports stuck and there's no jollier place than Minnesota in winter.

And here's the picture of the first ice palace. We built it of ice blocks cut from the Mississippi, built it as we would of stone. These blocks averaged two feet square by four feet long. The walls were two blocks thick, some four feet; we used water instead of mortar, so the whole mass of wall stuck together as a monolith. The carving was done in the ice, the Viking groups, polar bears, etc., etc. It was good fun and easy, for if we knocked off an ear or a leg in the doing, why we fashioned another, put a little water on it, stuck it on and the below zero nights did the rest to make it whole. We used wood beams and floors even away up in the tower, platforms upon which the defending clubs stood, valiant knights of St. Paul, who threw down stage fire and toy bombs upon the attacking forces from Minneapolis.

The palace stood in a park, some nights we'd have all the city and other lights of the neighborhood turned off and a hundred arc lights gleaming within the palace. This would throw the whole structure into most weird effulgence; we played beautiful color effects through the translucent mass of the walls, a veritable Arabian Nights fairy dream. The moonlight effect upon this great diamond-like structure was marvelous. No inlaid pagoda of India or marble temple of Greece ever equalled the wondrous effect.

Along toward spring they'd sell the ice to a packing house, but one year they fenced the building in and let it stand. Away into July it resisted the sun, a beautiful ruin, yes, but still a great, gleaming mass uncannily paradoxical, the very epitome of a paradox on a hot summer's day.

Yet it was something to have designed a structure the like of which had not been and has not been since attempted. . . .

* * *

Breaking Up Concrete With Dynamite

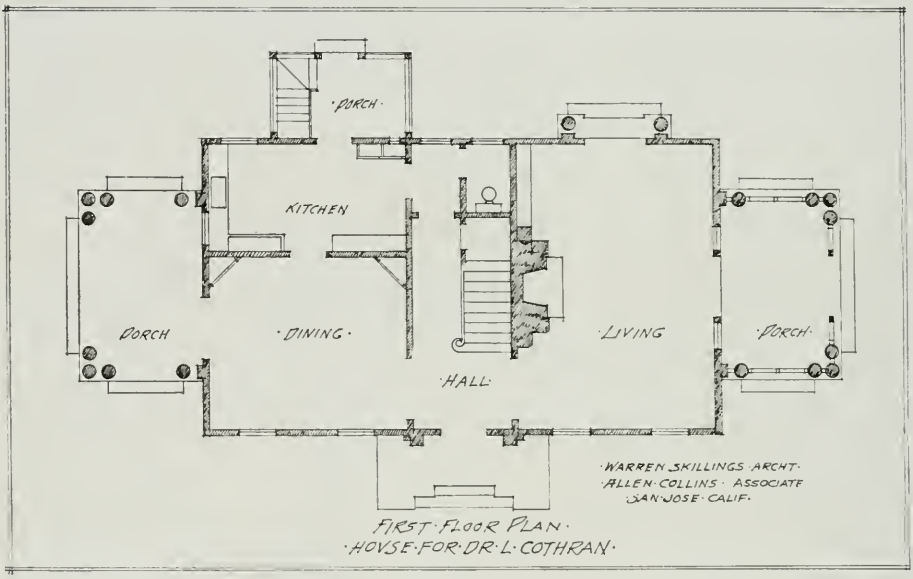
CONCRETE structures, either plain or reinforced, are considered of the most permanent nature. It is, however, often necessary to remove or destroy such structures. It may be an old concrete wall, bridge abutment or pier, a foundation under a building, the lining of a tunnel or an engine bed. Many times these objects are inside factory buildings and adjacent to valuable machinery, or the mass to be removed may be in close proximity to buildings, or to a city street congested with traffic or under an office building.

The customary method of removing old concrete so situated is by drilling holes with jumper steel and sledges by hand and then breaking off the material bit by bit with wedges. This is a very slow and expensive way to handle work of this kind. Another method of removing old concrete, brick or masonry, is by blasting with explosives. In doing this class of work care must be exercised to see that the holes are properly located, and that light charges of explosives are used. It requires no particular caution or ability to blast old walls of concrete, brick, etc., that are located in open places, where there is little likelihood of damage to surrounding property. But it is in cases where the structures to be removed are located close to and often are a part of valuable property, machinery and buildings, that care and a nice sense of judgment must be exercised, and it is for such work that these instructions are written.

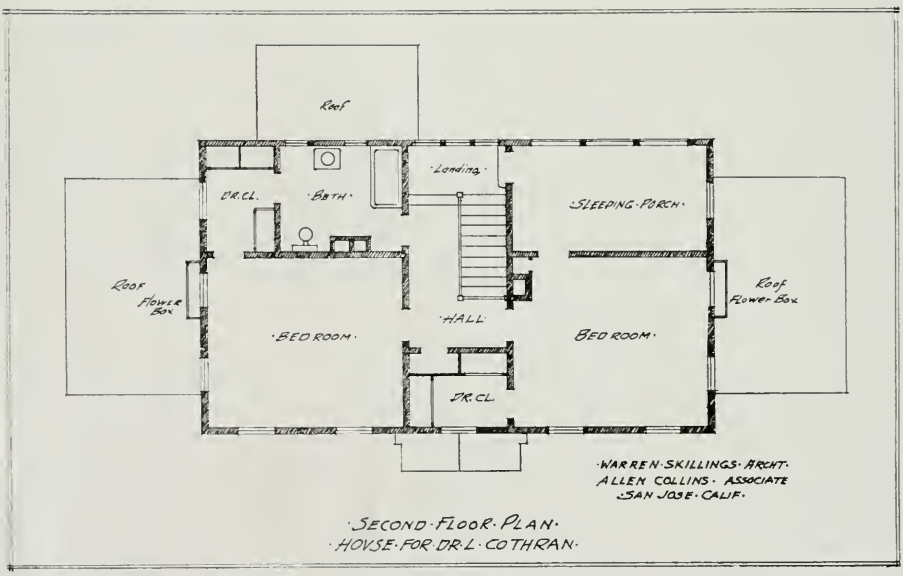
An explosive of relatively slow heaving action, like ammonia 30 per cent to 40 per cent strength, is best adapted for such work rather than a very quick and shattering explosive.

The drilling of holes is best accomplished by the use of self-rotating hammer drills, but when the size of the work does not warrant such equipment, holes can be drilled by hand, using jumper steel or hand drills and sledge. It is best to demolish the structure by gradual steps or benches, or a little at a time, especially if located inside or under a building. Holes are drilled, as a rule, from 1 inch to 1½ inches in diameter, and in depth depending on the thickness of the material, although 6-foot holes are about as deep as should be shot in close quarters.

One of the concrete abutments under a bridge had become undermined and had fallen into the channel of the stream. The concrete block was straight for the width of the bridge and had wings at each end intended to brace and anchor it into the earth. The block was about 3 feet thick and 7 feet wide, and was covered with about 18 inches of water. The wings were sticking up out of the water and obstructed the channel. Ammonia 40 per cent dynamite was used. The shot broke off the two wings and broke the center section in two parts. The blocks left by the blast were small enough to be handled by laborers, and were used as the foundation for the new abutment, built shortly afterwards. The entire job took just one hour.—Engineering & Contracting.



FIRST FLOOR PLAN, HOUSE FOR DR. LINCOLN COTHRAN, SAN JOSE
Warren Skillings, Architect



SECOND FLOOR PLAN, HOUSE FOR DR. LINCOLN COTHRAN, SAN JOSE
Warren Skillings, Architect

HOUSE FOR DR. LINCOLN COTHRAN, SAN JOSE
Warren Skillings, Architect

Cleaning Los Angeles Streets with Vacuum Process

THE use of vacuum cleaners has practically eliminated flushing of paved streets in Los Angeles, California, according to the last annual report of Mr. A. C. Hansen, City Engineer, which gives the following particulars of this method of street cleaning: During the year ending June 30, 1918, four vacuum cleaning machines were employed, working two shifts of eight hours each under the supervision of two city inspectors. The city paid 10½ cents per 1000 square yards cleaned, the contractor furnishing and maintaining the equipment with a driver. The four machines clean approximately 1,500,000 square yards of pavement each day of two shifts. These machines have a vacuum suction apparatus, with a rotary fan operated by an independent motor mounted on a 2½-3½-ton truck. Each machine is equipped with a speed recordograf that registers the speed traveled during any portion of the day, the distance traveled, and the time during which no work is being done, whether standing in the garage or on the shift. As the speed at which these machines are operated is an important factor in the quality of work produced, the contract is conditioned for a speed not to exceed 4½ miles per hour, and as the recordografs register the miles traveled during each shift they operate (within certain limits) as a check upon the speed maintained while cleaning a street, and on the area claimed to have been swept. Each machine is given a certain group of streets for each shift during the week. No machine is allowed to work on streets not on the particular route to which it is assigned except by authority of the city foreman in charge of the work. Within certain limits these routes are sufficiently flexible to meet the unforseen change in conditions that may arise.

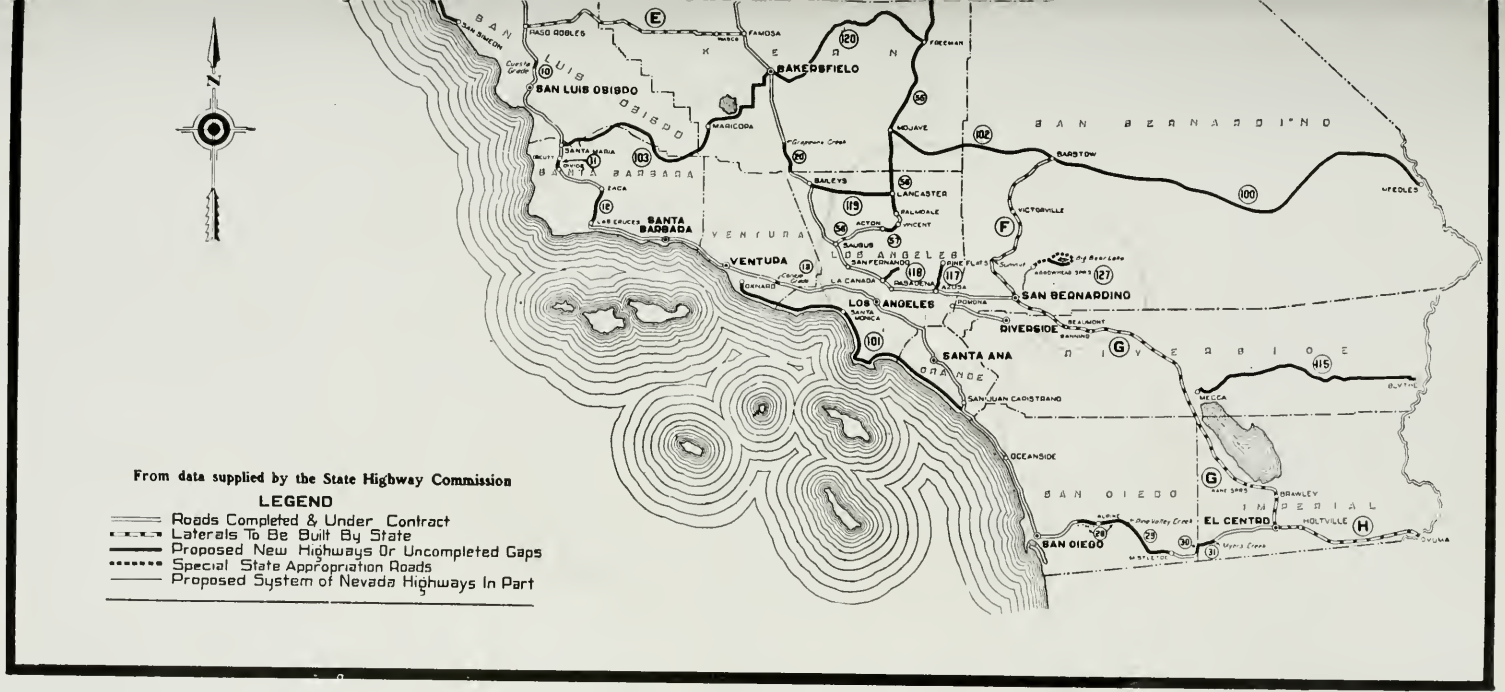
MAP SHOWING COMPLETED AND PROPOSED HIGHWAY WORK IN THE STATE OF CALIFORNIA

Table of Sections of the $3,000,000 Laterals to be Constructed Entirely at State Expense Under the $40,000,000 Bond Issue of 1919

Key	From	To	Miles	Type Wk.
A	Arcata	Douglas City	102.0	Grading
B	Gilroy	Califa	83.5	Paving
C	Mariposa	El Portal	32.6	Grading
D	San Lucas	Hanford	98.3	Paving
E	Paso Robles	Famosa	91.3	Paving
F	San Bernardino	Barstow	39.9	Paving
			36.4	Grading
G	San Bernardino	El Centro	139.6	Paving
			15.5	Paved
H	El Centro	Yuma	44.3	Paving

Analysis of Mileage of Roads, Types of Work, etc., of the Additional Proposed Routes in the $40,000,000 Bond Issue

No.		Cal. Hgwy. Com., Estm. Miles
100	Barstow to Needles	180
101	Oxnard to San Juan Capistrano	130
102	Barstow to Mojave	75
103	Santa Maria to Bakersfield	122
104	Sky Line Blvd., S. F. to Santa Cruz	67
105	Rio Vista to Fairfield	24
106	Auburn to Verdi	96
107	Ukiah to Tahoe City	222
108	Crescent City to Oregon Line	40
109	Santa Rosa to Shellville	24
110	Big Pine to Oasis	40
111	Placerville to Sportsman's Hall	10
112	Feather River Route, Oroville to Quincy	92
113	Gen. Grant Nat. Park to Kings R. Canyon	20
114	Calistoga to Lower Lake	32
115	Mecca to Blythe	100
116	Rumsey to Lower Lake	35
117	Azusa to Pine Flats in San Gabriel C'ny'n	10
118	La Canada via Arroyo Seco to Mt. Wilson Road	10
119	Lancaster to Baileys	40
120	Bakersfield via Walkers Pass to Freeman	80
121	McDonalds to Mouth of Navarro River	47
122	Carmel to San Simeon	97
123	Klamath R. Bridge to Co. State Highway	177
124	Susanville to Nevada State Line	53
125	Pacheco Pass Road to Hollister	8
126	Visalia to Sequoia Park Line	36
127	Deep Creek Easterly to Metcalf Creek	14
128	Orland to Chico	20
129	Tiburon to Alto	5
130	Michigan Bar to Drytown	12
	Total Miles	1918



REFERENCE TABLE OF GAPS IN THE STATE HIGHWAYS TO BE CONSTRUCTED UNDER THE $40,000,000 BOND ISSUE OF 1919

Key No.	From	To	Miles	Type of Work
1	Crescent City	South Boundary	30.0	Grading
2	North Boundary	Arcata	55.1	Grading
3	Arcata	Beatrice	14.1	Paving
4	South Boundary	Fortuna	69.9	Paving
5	North Boundary	Forsythe Creek	88.6	Paving
6	4 mi. S. Ukiah	South Boundary	23.3	Paving
7	North Boundary	Healdsburg	20.5	Paving
8	King City Bdge.	King City	1.7	Paving
9	San Ardo	Bradley	1.5	Paving
10	Cuesta Grade		3.5	Paving
11	Orcutt	Divide	3.6	Paving
12	Zaca	Las Cruces	14.5	Paving
13	Conejo Grade		1.5	Paving
14	Oregon Line	South Boundary	72.0	Paving
15	North Boundary	South Boundary	80.2	Paving
16	North Boundary	Butte Co. Line	45.4	Paving
17	Galt	South Boundary	2.0	Paving
18	North Boundary	Houston School	1.5	Recon.Co.Rd.
			3.8	New Paving
19	Stockton	South Boundary	15.6	Co. Paved Rd.
			3.0	New Paving

Key No.	From	To	Miles	Type of Work
20	Grapevine Creek	South Boundary	10.7	Paving
21	At French Camp and Banta		2.5	Paving
22	Castro Val. Rd.	Hayward	0.5	Paving
23	Los Gatos	South Boundary	8.2	Paving
24	North Boundary	3 mi. S. Glenwood	8.4	Paving
25	Ignacia	Petaluma Creek	3.3	Paving
26	Petaluma Creek	East Boundary	15.5	Paving
27	Stanley Lane	Napa	2.6	Paving
28	Alpine	Pine Valley Creek	24.0	Paving
29	Pine Valley	Mistletoe	24.3	Grading
30	Along San Diego-Imperial Co. Boundary		2.8	Paving
31	West Boundary	Myers Creek	5.1	Paving
32	Oakdale	Knight's Ferry	11.6	Paving
33	Hopland	East Boundary	10.1	Grading
34	West Boundary	Lakeport	9.2	Grading
35	Through Rocklin		1.5	Paving
36	Auburn	North Boundary	6.7	Paving
37	South Boundary	Grass Valley	15.0	Paving
38	Nevada City	North San Juan	14.0	Grading
39	Merced	East Boundary	14.9	Paving

Key No.	From	To	Miles	Type of Work
40	Redding	West Boundary	26.0	Grading
41	East Boundary	Weaverville	27.0	Grading
42	Lodi	East Boundary	12.3	Co. Paved Rd
			4.3	New Paving
43	Redding	Lassen Co. Line	85.0	Grading
44	Bieber	North Boundary	13.0	Grading
45	South Boundary	Alturas	41.0	Grading
46	Red Bluff	East Boundary	52.5	Grading
47	Tehama Co. Line	Lassen Co. Line	23.0	Grading
48	West Boundary	Coppervale	10.0	Grading
49	Clay	East Boundary	8.5	Grading
50	West Boundary	Jackson	16.6	Grading
51	Bridgeport	Tioga Pass Jct.	26.3	Grading
52	Deadman Creek	Sherwin Hill	27.7	Grading
53	North Boundary	Fish Springs School	36.2	Grading
54	Division Creek	South Boundary	89.2	Grading
55	Inyo Co. Line	Los Ang. Co. Line	80.0	Grading
56	North Boundary	Palmdale	16.0	Paving
57	Vincent	Acton	3.3	Paving
58	Sec. 15, T. 4 N. R. 15 W.	Santa Clara River	1.9	Paving

Maintaining and Painting Highway Bridges

By CHARLES D. SNEAD*
Bridge Engineer, Kentucky State Highway Department.

NO maintenance of bridges will be as effective as that applied regularly each year and the necessary repairs determined by periodical inspection—every structure, concrete, steel, wood or pipe, and a detailed report made upon their condition. More frequent inspections should be made of structures in a bad state of repair, while small culverts should be inspected after every hard rain. By such a system repairs can be made where and when needed. The cost will not accumulate nor will the structure be allowed to suffer from the lack of repairs.

CLASSIFICATION OF STRUCTURES

I will explain what I should do with the funds available were I county road engineer in your county, and will try to suggest something helpful.

First—A complete inspection would be made and a complete report of every existing structure within the county.

Second—The structures would then be subdivided into three classes: (a) Structures needing no repair or maintenance, (b) structures which must be rebuilt immediately, (c) structures which may be repaired or strengthened.

Third—The classes noted under (b) and (c) would again be subdivided, the class noted under (b) under three subheads as follows:

(1) Structures which must be permanently renewed, both the substructures and superstructures.

(2) Structures in which the substructures only shall be renewed permanently and a temporary superstructure built thereon.

(3) Structures in which the substructures are serviceable and require a permanent superstructure.

The bridges noted under (c) would be subdivided as follows:

(1) Bridges requiring strengthening to trusses and floor systems.
(2) Bridges requiring no strengthening but new floors.
(3) Bridges requiring only painting.
(4) Bridges requiring partial painting and repairs to floor.
(5) Bridges requiring complete repainting and new floors.
(6) Bridges requiring repairs to the substructure.

What would be the value of such a complex system of dividing and subdividing? There are many things it would show quickly. First, it would give a complete list of structures with a classification which would allow the only correct distribution of the bridge fund. Second, it would show your court what was necessary on every bridge in the county during the coming year. Third, it would quickly afford a basis for estimating the money necessary for this maintenance and construction and would be in such a form that it would appeal to every business man in the county because he would know you had investigated conditions. Fourth, it would emphasize the want of funds for this work. Fifth, it would outline this work for your men in advance for the year in every district and eliminate bringing the forces back and forth as these conditions were discovered or reported.

Having completed the report and an estimate of the cost of the work, it should be published in every newspaper within the county with a statement of

* An address delivered at the Road School of the University of Kentucky.

the funds available and your policy for expending such funds in each district. Everyone would then see that the money had been allotted where needed. This is the only reason for a common pool of the county's funds in the county treasury, and the only equitable way of spending money raised by taxation.

STRENGTHENING AND REPAIRING OLD BRIDGES

Only class (c) structures will be discussed under maintenance—bridges which are to be strengthened, painted, refloored or upon which work is required on the substructure. This work through necessity must be handled both by force account and by contract and it is well that we consider the most important features of such work, namely, strengthening old bridges, reflooring and repainting.

The old wooden trusses if too light for modern traffic do not offer much opportunity for strengthening at an economical cost. These trusses should be temporarily repaired and their floor systems brought up to the maximum capacities of the trusses. These bridges should be posted with signs warning the traveling public against overloading. The maximum allowable load should be clearly stated on the sign. It is possible that the floor systems can be increased by increasing the number of the floor beams and stringers, or else by increasing the size of floor beams and stringers. This can be economically done at a time when the floor has been removed for stringer repair or reflooring.

Many of the light steel truss bridges can be strengthened by changing the sizes of floor beams and increasing the number of stringers so that they may be made to carry safely double or perhaps three times the present wagon or truck loading. It may be necessary to make changes in connections and in certain web members to increase the capacity, but it can be done cheaper than rebuilding in many cases. It is far cheaper to spend a few dollars in strengthening than to allow structures to be daily overloaded and their cost of maintenance to soar. There is a certain bridge I have in mind in which it is impossible to keep the floor nailed down because the stringers and floor beams so deflect under the heavy loads that they pull the nails.

There is a suggestion, too, with regard to strengthening bridges which may be accomplished with little additional expenditure. It is more important to be able to get your loads over a structure than it is to save time getting them over. It is possible in some cases to reduce both the dead load on a structure and to confine the moving load to the center of the bridge and thus carry over with safety greater loads. This can be accomplished by reducing the width of travel way of the bridge. The proper fences and guard rails must be installed to prevent accident or traffic from using the remainder of the structure.

BRIDGE FLOORS

The day when bridge floors 2½ to 3 inches thick can be economically used for modern traffic has passed. For heavy traffic the maximum span for 4-in. flooring should be about 27 inches. This span can be somewhat increased for loads of ten tons or less, or 3-in. floor used when the spacing of stringers do not exceed 24 inches. Investigation of your bridge floors will show that few of them remain long enough for decay to destroy, but instead traffic wears them out. In replacing wooden floors, if the span is not strong enough and cannot be economically strengthened to carry a better type of floor, it is to be recommended that a 2 by 4-in. wooden floor be used, the lumber being laid on edge and all contact surfaces thoroughly swabbed with hot tar and cambered to shed water. This type of floor has been extensively employed on

new structures and is giving complete satisfaction. I have recently had occasion to inspect such a floor which had been down for nearly 6 years and it showed no signs of decay or wear, yet it was subjected daily to a large volume of heavy traffic, both horse and motor drawn. The cost of this type of floor is about 50 cents per square foot of floor surface. In laying this type on old truss bridges whose stringers in the end panels merely rest on the concrete or masonry, it will be necessary to anchor at least the outside stringers to the masonry or else the floor will lift the stringers. About one barrel of tar is required for every 30 feet of length if the bridge has a 16-foot roadway.

PAINTING

Where the paint shows signs of deadness or rust has begun on the steel, these portions at least should be thoroughly cleaned and repainted with red lead. It is not always necessary to repaint a bridge throughout and it is a poor policy to allow a portion of the structure to rust because the whole does not need repainting. This protection of your steel where needed may save repainting the entire structure for several years.

When a bridge is to be repainted the steel must be thoroughly cleaned of rust, dirt, grease and dead paint. Too much emphasis cannot be laid upon the necessity of a thorough cleaning. A span may be cleaned by scraping, brushing with a wire brush, burning off the dead paint with a torch and then scraping or by a sand blast. The sand blast is the most efficient method.

When it is necessary to repaint a bridge entirely and thoroughly clean it, red lead next to the metal itself is recommended. If in paste form, it should be mixed with boiled linseed oil in the field, about 18 lbs. of red lead to one gallon of oil. After this coat has thoroughly dried an additional coat should be applied. For the additional coats, some light colored paint is recommended because it betrays the presence of rust, harmonizes with the substructure and makes highway bridges readily visible at night. This paint should be mixed in about the same proportion by weight to the gallon of oil if mixed in the field as specified for red lead. The cost of the paint itself is comparatively small to the cost of labor applying it and to the cost of cleaning the structure. Only the very best paints should be used.

ESTIMATING AMOUNT OF PAINT

Knowing the weight, or by estimating the weight of a structure, we may approximate the amount of paint required. The old rule, namely, ½ gallon of mixed paint for the first coat and ⅜ gallon for the second and third coats per ton of steel give fair approximations. The weigth of light steel bridges may be calculated approximately from the following formula by Kunz:

$$W = (0.12L + 12)\ (1.6 - 0.03B)\ BL.$$

W = weight of steel.
L = length of span.
B = width of roadway.

The estimated weights of the bridges built under the state are listed on the plans.

COST OF PAINTING

The cost of applying the paint will vary due to different prices paid the labor, and the same is true with regard to cleaning. This cost may be approximated by assuming a painter to cover 600 square feet of surface per day. Applied to gallons of paint it means that a painter will apply about 1½ gallons in an 8-hour day, or if applied to tons of steel, one painter should cover

about three tons per day. This appropriation will be found to agree fairly close to the actual cost if much scaffolding is to be done. The cost of cleaning will vary still more. It may be estimated if the steel is in bad condition that it will require one man one day to clean a half ton of steel, while if there are places which may be skipped, one may clean a ton within the same period of time. With the data expressed in hours, it can at once be referred to any scale of wages.

Paint to be effective must be elastic, must retard and prevent as far as possible rust; it must be a non-conductor of electricity and must be insoluble in water or else it will break down and disintegrate. Moisture cannot be excluded between the steel and paint, if paint is applied during wet or freezing weather. The second coat of paint must never be put on until the first coat has thoroughly dried.

* * *

Extension of Service by the Architect

Do the poor build? We think not. Tenements for the poor, or rather the poorly paid, are rarely built for them. They inherit the cast off, the run-down property due to the growth of cities and the encroachment of business on residential quarters. The conditions of the poorly paid are social, not architectural. Architects as a body realize this and can do good work in curing the evil if they have the courage to stand against the interests profiteering by the conditions.

Architecture as a fine art must be necessarily a luxury—this is a condition in the development of fine arts under civilization as it is today. What the future holds, who knows? At present the architect builds for the poor the jails, reformatories, orphanages and homes for outcasts.

Architecture as a business service cannot be available to those whom we class as poor unless made available through the State, as is fire protection, police, etc.

It is suggested that where small houses can be built, one or two family houses, the architects can help by concerted action of groups of architects of cities or States, working on this problem and supplying to the public sets of plans, specifications, and bills of material required to construct such small dwellings in the best design possible, of substantial construction and with economy as to plan.

The public looks upon the architect as a profession useful to those who can expend comparatively large sums of money. There is a class who look upon the architect as valuable in preventing robbery by the contractor.

Architecture as a service vital to the public welfare is not too well known to the architects themselves and almost wholly unknown to the public. They should be informed.—(Extract from Report of Louisiana Chapter, American Institute of Architects, Post-War Committee.)

* * *

Percentage Remuneration

The percentage remuneration of the architect is without doubt fair to the architect and his client.

A charge based on a fee for service and the expense of each work charged directly to the client is the proper one, but is open to objection on the part of the client that he is without knowledge as to the final cost and the architect is not in a position to demonstrate satisfactorily to a client his expense ac-

count. Precedent and a knowledge of the approximate amount of the fee (where based on a percentage) to be paid seems wholly satisfactory to the client, and his experience before the completion of a work usually satisfies him that the architect does not take advantage of the system to increase costs.

The established schedule of charges is unjust to the client and to the architect in certain instances by over and under charge. No change in the present method of charge seems practical at this time.

Supervision of Construction: The client generally looks upon the work as requiring personal service of the architect. The building is the concrete work in which the client is interested. The documents are only a guide to arriving at the result and the architect must be in close touch with the work, otherwise the contractor will be the constructor in the eyes of the public, and the essential party in the operation, to the detriment of the architect. The question as to whether the owner is satisfied with the supervision of the construction by an employee of the architect seems to be a personal one and not subject to any rule. The ability and experience of the employee is the guiding factor.—(Extract from Report of Louisiana Chapter, American Institute of Architects, Post-War Committee.)

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Houses Are Scarce

Walt Mason on Home Building

OFT I hear discordant slogans, hear the loud and sad lament; men are wearing out their brogans hunting houses they can rent. Every village, town, and city sees the same discouraged crew; and it seems to me a pity that good houses are so few.

In my native burg, Empory, I see women chasing round, and they tell the same old story—houses simply can't be found. And the same sad word is spoken everywhere I chance to roam; from Topeka to Hoboken folks are hunting for a home.

When they're sick and tired of chasing, when their souls with woe are filled, maybe they will do some bracing; maybe they'll decide to build. Rents are higher now than ever, and the prices won't slump back, and that man is really clever who will build himself a shack.

"But the cost!" I hear men yawping; and they put up thoughtless roars, for they never have been shopping at the modern lumber stores. Building goods today are cheaper than all other goods you buy; all commodities are steeper—ask the lumber dealer nigh.

Moneyed men are often questing for gold bricks, and dern the price: always ready for investing in blue sky and pickled ice. If they build a lot of houses they might dwell in Easy street, where the catawampus browses, and the dingbat's song is sweet. Every time they'd build a dwelling crowds would come, and still increase, crying, clamoring, and yelling, begging for a five-year lease.

There's no better proposition than this thing of building homes,
And the man should find position in the plutocratic domes.
And the men with modest bundle should be renting nevermore; he should take his wad and trundle to the lumber dealer's store.
There should be a boom in building such as we have never seen; palaces with ornate gilding, modest homes, all painted green.

Automatic Sprinkler Protection a Necessity

By C. G. SHERMAN *

IN these unusual times when the English-speaking people on this continent are striving to conserve every available resource it is particularly fitting that attention should be given to the protection of the country's resources from its most insidious and persistent enemy—fire. The fire wastage in Canada and the United States has never been so apparent or so significant as at the present time, and this wastage must be appreciably reduced or such absolute and utter losses will reach the proportions of national calamity.

Essential industrial enterprises probably never before have had the high monetary valuation that has been the case since Canada and the United States became such potent factors in supplying the Allied world with the necessities to make war and live. An immediate inventory of the replacement values of practically every industry would undoubtedly show nearly one hundred per cent increase since the corresponding period in 1914. It is doubtful if a large number of the captains of industry have come to realize and appreciate just what an enormous advance this really is, and how immensely important it has become to use every reasonable means to conserve their present facilities. It is positively criminal to call upon the Allied market to replace materials which have been needlessly and carelessly destroyed by fire.

Let the thinking business man take himself apart for a serious moment and look a short time into the future. Let him consider that by a concerted, country-wide movement that it would be possible, putting it conservatively, to reduce the country's fire losses by seventy-five per cent. Let him compute this saving in indisputable dollars and cents and he will discover that the people in this country will go a long way towards paying the interest on the present Dominion war debt by this saving alone. And nothing is more certain than the fact that he is now paying it through some medium of added taxation.

Suppose we consider the responsibility of the manager or managing director of any essential industry. Invested capital is merely a sum of money an individual, or body of individuals, has loaned for the purpose of conducting a dividend-paying business. The management or directorate of this business is made responsible for the proper handling of such moneys which it holds in trust. The impression that full insurance gives adequate protection to invested capital is worse than a delusion—it is a common mistake, and sometimes a deliberate attempt to side-step responsibility. Insurance only partially restores invested capital; it does not pay dividends nor does it maintain the market for the industry's product, which is of such vital importance to its continued success and prosperity. Strictly speaking the province of fire insurance is to stabilize all classes of industry; its availability offers security in the promotion of new business and in the maintenance of established business, but it is not and should not be considered as a cure-all for carelessness.

Practically every business owner in this country who has not availed himself of adequate fire apparatus, deplores from time to time the fact that large sums of money are periodically being paid out for fire insurance. He has come to consider this as an inevitable expenditure—one of his fixed overhead charges. Perhaps he gropes about in his mind for a reason; his own buildings are well kept and clean, and while he makes the mental admission that there is a possibility of fire, yet he knows that the chances are against such a disaster; so he looks outside for the reason; his neighbor across the street is operating in the same line of business, and it is a well-known fact that this competitor has been very busy in his task of making money and has become careless in the manner in which he maintains the cleanliness and repair in his

* Department Manager, Canadian General Fire Extinguisher Co., Ltd., Toronto.

factory; the aptly applied term, "good moral hazard," has become a negligible one, and the possibility of an unfortunate fire is very apparent.

Now, right there is where every industrial manager will find the answer to his problem. It is not merely the carelessness of an individual, but the persistent procrastination of thousands and thousands of business owners and managers to put themselves face to face with the problem of eliminating the fire hazard which exists in their properties. Year and year they are "too busy"; they have taught themselves to believe that there are so many more important things to be done first, while the primary rudiments of successful business teach the care and protection of every useful facility as one of the first essentials. These are the reasons which make fire insurance rates high and the reasons which make these high rates justifiable. This indifference accounts for hundreds of disastrous fires with resultant losses which run, yearly, far into the millions in Canada alone. And there will be no alleviation of this evil until every interested individual takes himself in hand and makes it his particular business to correct the faults which are staring at him. And, indeed, if this is not done, the time is not far distant when such carelessness will be considered criminal negligence and means taken to prevent its occurrence. In the great majority of cases too much sympathy is expressed when a man has a fire; it is considered a great misfortune by his colleagues in business, when, as a matter of fact, his sympathizing friends are footing the bills through their high insurance premiums. Any man who suffers a loss by fire through his heedlessness or negligence should be absolutely deprived of any insurance remuneration whatever; and any other man whose losses can be directly traced to the negligence of his neighbor should be repaid by the one guilty of such neglect.

Now is the time to give consideration to some tangible remedy, to some definite ways and means for actually preventing by far the larger percentage of fire losses in Canada. Now is the time when every industrial owner who has not taken advantage of the security afforded by full fire protection should conscientiously study his own situation and the conditions existing in his own properties. This brings us squarely before the question of exactly what is full fire protection and the method to be employed to make this a fact. There is only one device known which will detect fire and automatically extinguish it and this is the automatic sprinkler. Without the installation of an equipment of automatic sprinklers no factory or property can be said to be fully protected. Much can be done, and should be done, by every property owner to maintain high standards of cleanliness and repair in his premises, but this only goes one-half the distance; it removes many of the causes, but it does not provide protection in emergencies which so often arise. And this undeniable statement may be made that the only man who can honestly say to himself that he has protected both his own property and the investment which it represents, and at the same time has removed the menace to his neighbor, is the man who has a standard installation of automatic sprinklers and maintains it in an operative condition at all times.

It is the purpose of this article to deal only with the classes of industries that have a total valuation of about seventy-five thousand dollars or more. Most properties with a total valuation of less than this amount are entirely adaptable for automatic sprinkler protection and their effectiveness is the same in either large or small properties, but the advantages to the owner probably decrease more rapidly than the corresponding decrease in valuation. Now standards of installation for small buildings will have to be worked out and collaborated with the great Underwriting factors before the same measure of economy can be realized for the small industry.

Automatic sprinklers have become so well known for fire fighting purposes and are now so standardized and thoroughly commercialized that no space will be taken here for an explanation of the technical details of the apparatus. Their operation and serviceability may be summed up in two general definitions: They are so designed that when in operation they throw a fine spray of water, first smothering the blaze and soon finally extinguishing it; they are so installed that they only operate at the point or points where the fire occurs eliminating damage by water except to the extent of putting out the fire. Intrinsically they are as nearly fool-proof as it is possible for human ingenuity to devise, depending only on the human element for proper installation and care. And ninety per cent of the care of them consists of letting the whole apparatus entirely alone.

Automatic sprinklers are adaptable to every class of risk where a fire is likely to occur and where water will put out a fire. There are a few special hazards where water has a tendency to spread the fire rather than extinguish it, but these are rare exceptions. There are no types of building construction where their operation is not effective and equipments are as successfully designed and installed in beautiful department stores, offices or club rooms, as they are in factories, flour mills or warehouses. The fact that there is no heat in a building, or too much heat in a factory, makes no difference to the possibility of their installation or their positive operation. The only feasible method in the world for fire-proofing the contents of a concrete fire-resistive building is the installation of automatic sprinklers. The expression "fire resistive" is used advisedly; steel and concrete construction will resist heat to certain temperatures, but beyond that it disintegrates quickly, and many examples of exceptionally hot contents fires have given plentiful evidence that the word "fire-proof" is a misnomer. Let not the man who has used excellent foresight and built his factory of concrete be influenced to the point of believing that automatic sprinklers are of no value to him. With them, his risk is probably the best obtainable from the standpoint of fire hazard; without them his risk is not so good as a poor old joist building which is fully equipped with sprinklers.

What is it that makes automatic sprinklers so tremendously valuable as a means of fire protection? It is because they are at least ninety-five per cent efficient. This statement is made with all conservatism, founded on the statistics computed by the stock and mutual fire insurance companies on the one hand and by the manufacturers on the other. It can be just as conservatively stated that they are more than ninety-eight per cent efficient when the operation of the system has not been handicapped or obstructed in any way. Automatic sprinklers have gained their place as a fire protective agent simply through the magnificent thoroughness of design and manufacture which has followed the device through its entire development; and equally important has been the close cooperation which all insurance organizations have shown in maintaining the high standards for their installation and inspection. Then, too, the automatic sprinkler is committed to a life long duty, and is everlastingly on the job.

One of the features which is apparent in every installation of automatic sprinklers is the fact that insurance rates are very materially reduced, when a standard equipment is installed. In the great majority of cases the owner realizes a handsome dividend from his investment in a sprinkler system through his insurance savings. But the point in this connection which may well be brought out is that this is the last and most readily understood proof that automatic sprinklers do what they are designed to do—put out fires. Insurance companies are not writing fire insurance as a form of charity, but they have perceived that sprinklered risks are the finest, safest and most desir-

able properties to insure, and they have expressed their desire to write these lines of insurance by quoting very low rates on them. It is their invitation to the industries of this country to place themselves where the chances of fire loss are most remote.

Some property owner may say to himself: What shall I do? It is probable that he has never had a serious fire and considers that he may be one of the fortunate few who may escape. The message that this man should receive together with thousands of others is this: Give the problem of adequately protecting your property from fire your most serious and earnest consideration; do not give it a casual thought and pass it by, but get to the very essentials of your own situation; do not allow the fire thief to lie waiting ready to strike when you are least prepared and when the consequences are sure to be the most disastrous; do not accept the advice of your partner or business friend as final as he may be procrastinating himself. Every industrial owner or manager who is responsible for an investment or property valuation of seventy-five thousand dollars or more should get expert advice on automatic sprinklers. Suggestions should be secured from the insurance agent or broker as to tentative sprinklered rates; equipment costs should be obtained from the installing companies; the opinion of business friends who have automatic sprinklers installed in their buildings should be consulted. Expert opinion on automatic sprinklers may be had from many sources; advice that is given honestly, impersonally, without remuneration; and the man who avails himself of all this information and adds to it his own serious conclusions, is only honest with himself and the investment which his business represents.

If it is necessary to conserve the nation's resources in these unprecedented times of reconstruction, then the answer is unqualifiedly—YES. For no other agent has ever been found that compares with the automatic sprinkler in the absolute protection from fire which it affords. By far the greater proportion of loss occurs from fires in plants having the larger valuations—losses which would be reduced to almost the vanishing point if these industries were fully protected. Surely the leaders in the nation's industrial life must understand that these enormous losses are draining the potential wealth of the country, and that they, first of all, must set in motion the wheels of conservation.

* * *

New Concrete Water Towers in Germany

Several concrete water towers were built in Germany during the war, according to the Journal für Gasbeleuchtung of April 5, 1919, which gives details of some of these structures. A water and outlook tower was erected in the town of Schildberg, in Posen, from a design of Klein and Wolff, architects at Breslau. A tank of 250 cu. metres capacity free, i. e., without connection with the sustaining structure, rests on a floor of reinforced concrete borne by eight pillars of reinforced concrete joined by thin ornamental walls. The winding stairs are of moulded blocks made to represent stone. At the top cornice level is a circular outlook gallery. The cost of the tower was Mk. 70,000. Another structure is a water-tower or industrial works in Upper Silesia. The tank, which has a capacity of 2,000 cu. metres, is 31 metres above the ground level. Below this tank is another of 150 metres capacity for drinking water. And on the ground level is yet another of the same capacity for ozonizing purposes. Difficulties with the foundations made it necessary to excavate down to the firm rock, and to fill the excavation with 1 to 12 concrete. Here again the main tank is independent of the supporting structure. It is constructed of an inner portion of strong cement 4 centimeters thick. It is carried on concrete pillars bound together at intervals. The total cost of this structure was Mk. 300,000.

Co-Operation of Architects, Engineers and Other Technical Men

IN an informal address at the last convention of the American Institute of Architects, Mr. D. Knickerbocker Boyd pointed out the desirability of co-operation between architects, engineers, the national Government and all important technical and other organizations concerned with any phase of structural activity. While Mr. Boyd's remarks referred particularly to the architectural profession, they apply equally well to engineers. His address in part follows:

Various departments of the Government and other organizations throughout the country, are performing services at all times and issuing publications that are of the greatest interest and usefulness to the architectural profession and other interested citizens—and yet how few of us, comparatively speaking, realize what is being done in this direction and how we are being benefited. The point is, that being the case, should it not create a reciprocal obligation on our part to co-operate with these agencies, not alone by availing ourselves of the information which can be obtained through publications issued by them, but by participating as fully as possible in their activities and contributing to the results which make these publications possible.

Should we not, as many of us as can, be members of the National Fire Protection Association, the American Society for Testing Materials, and some of the other national organizations which are working for the good of us all in the various problems connected with the sheltering of humanity? And yet there are only about 50 members of the Institute who are members of the National Fire Protection Association.

I believe that there are only three who are members of the American Society for Testing Materials. At the convention in Atlantic City last year of this society, there was a report submitted from the Committee on Fireproof Construction, and on the front page it was stated that the report had been prepared in collaboration with representatives from eleven important national organizations, which were listed, and, in the list, was not included the name of the American Institute of Architects.

Surely such a society is one which our members should join in force and in which we should make our influence felt by serving, not alone on that committee, but on the many others concerned with building materials and methods.

It seems to me that we have ourselves largely to blame that we are not more generally asked to participate in these and other public service movements, for we have not heretofore made sufficiently apparent the inclination to do so. So, I am going to urge upon you all to seek the opportunity to extend the architect's service by collaborating with these important agencies throughout the country which are doing work of so much benefit to us, individually as well as collectively.

How few of us are aware that the Department of Agriculture will provide information and furnish publications to any architect or citizen of the United States who asks for either. Many of the excellent publications are absolutely free and others may be had at merely nominal prices. It seems to me we should acquaint ourselves with the service which this department renders and the publications which it issues, and that in the case of the latter we should use as many of them as we can, should renew them, and wherever possible, offer suggestions for their amplification, improvement or greater distribution and utilization.

The same department has prepared an elaborate and most interesting model of a farmstead, showing all the buildings of such a group as well

as the layout of the grounds. Why should we not get in touch with the Department of Agriculture and offer our services in further development of this idea and see that such models are given the widest circulation and recognition possible?

The same thing applies to the Bureau of Education in the Department of the Interior. That bureau not only issues comprehensive publications relating to schoolhouses and all educational matters, but has prepared drawings for schools for the smaller communities of the country. I wonder how many of the architects know that such drawings have been prepared, that they are available to, and are secured and used by school boards and communities? Why should we not co-operate with the Government in the issuance of such drawings, if they need improvement, and, if not, at least let the department know that we are with it in this movement? It also has prepared a model for a schoolhouse for a small community, and that model is being asked for by school boards in various parts of the country and has doubtless proved very helpful to them in arriving at conclusions.

The United States Department of Labor and the Bureau of Mines have both made investigations into the subject of the housing of employes for many kinds of industry, and they have issued valuable publications relating to this subject which includes a monthly bulletin of the Bureau of Labor Statistics. I do not know how many architects are aware of these facts or whether they have applied for any of those publications, but if not, they should.

The Navy Department issues specifications for materials that are used in many features of building construction. These we should know of, and benefit by the results of these investigations.

In these and many other ways we should recognize what is being done for us by the various departments of our own Government, and afford them the realization that, as citizens, we are utilizing the results of their endeavors and are willing also to assist them in every way we can.

Among other things we should, it seems to me, co-operate with the American Society of Civil Engineers and other great engineering societies far more than we have ever done. In recognition of the important developments in materials and appliances which they have brought about we should voice our desire and willingness to take a more active part in such work.

We should also maintain a more cordial contact with, and give encouragement and assistance to, such organizations of producers and manufacturers as are constantly and conscientiously endeavoring to improve materials and processes and bring about a better understanding of their varied characteristics.

And, at the same time, I want particularly to mention the necessity for correcting the lack of co-operation on our part with the craftsmen, mechanics and others employed upon buildings. In this connection the American Federation of Labor maintains a Building Trades Department, composed of 19 organizations known as "Internationals", with local branches, in different parts of the country covering the various industries that pertain to building construction. These concern themselves, among other things, that we ought to know more about, with methods of safety in construction and the use of building materials.

Other organizations exist whose chief function is to make for safety in all the industries and in all walks of life. Among these are the National Safety Council, the American Museum of Safety, the Workmen's Com-

pensation Service Bureau, with the valuable work and publications of all of which we would do well to familiarize ourselves.

The National Education Association is another one of the bodies which is working for the safety of occupants in buildings and is one which has a Committee on Standardization of School House Construction and Planning. The same thing applies in the matter of co-operating with the Public Health Association and with the American Hospital Association, the latter of which has a Committee on Standardization of Hospitals. No architect is on that committee, and, doubtless, but few know of its existence. We should, it seems to me, co-operate with the American Medical Society. The same thing applies to the Chamber of Commerce of the United States, the national organization representing all local groups. Heretofore we have seemed to avoid connection with anything which implied a contract with commerce, but the times are changing and we are to change with them.

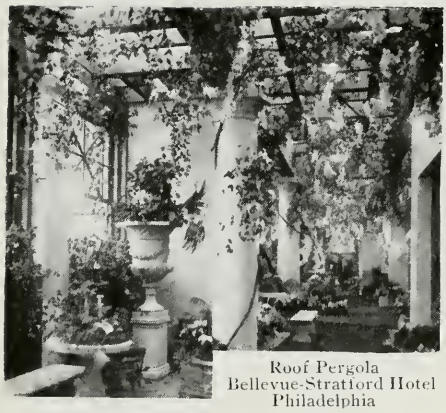
As an instance of the lack of co-ordination in lines of similar endeavor, take the case of the conference recently called by the American Civic Association and the American Housing Association.

Certainly none ought to be more interested than architects in those allied activities and yet these conferences were held in Philadelphia recently and they both covered ground already covered by the American Institute of Architects. These associations, apparently without notice or conference, were the initiators of a movement which should have been initiated by the architects and carried out in co-operation with these associations.

Another organization with which we have interest in common is the National Association of Real Estate Boards, and there are still many others which I can not attempt to recall in the course of an impromptu summing up of such an important sphere of activities. In concluding this outline sketch, however, I would like to make mention among them of the Illuminating Engineering Society. That organization has prepared a code for the adequate illuminating of industrial buildings, and is now working on other codes, one of them being for the proper illumination of school buildings. These codes concern themselves, as is perhaps not so generally understood, with the proper day-lighting of interiors, as well as with their artificial illumination by various methods. Certainly the architects of the country should be more familiar with these works and become, in large numbers, affiliated with that society. This, like several of those of which I have mentioned, is not subject to any restriction as to membership except the indication of a reasonable degree of interest and the payment of nominal dues.

In suggesting these as a few possibilities in the way of an extended national service, let me emphasize once more the impression which such service would be bound to create upon other groups and upon the public at large. I would convince them that we are persons interested, not alone in matters of design, of ethics and of pleasing disposition of materials employed in construction, but that we are also essentially interested in all matters which make for the health, the safety and the comfort of the occupants of all buildings. That we are concerned with the width and arrangement of streets, the light and air admitted to buildings, their sound and fire-safe construction, ample exits for safety from fire and panic, matters of proper sanitation, and with everything else which makes for decent places in which to live and work, and such facilities for play, recreation and enjoyment as shall make life worth the living.

Planting for the Pergola



Roof Pergola
Bellevue-Stratford Hotel
Philadelphia

LANDSCAPE architecture, says Touchstone, is the youngest perhaps of all the arts and the one that America may soon expect to see opening into full and radiant bloom. Architects have become interested in designing these glorious rooms roofed by the sky, walled by blooming hedges and floored with green grass starred with flowers, since they have been considered as veritable parts of the house. Gardens require architectural support even though such form is not apparent. Walks, proportion of grass plots, shapes of hardy borders, positions or furniture and ornaments must all be assembled in harmonious relation, else the garden will look unrelated to the house. So architects have come to include the designing of the garden in with the house plan.

Pergolas are a most important connecting and unifying link between house and garden. They seem to be a union of the most excellent characteristics of each. They are generally built of the same material as the house, that is, if the house is of concrete, the pillars of the pergola are of concrete, with the cross beams of square-hewn timbers or rustic according to the way the wood is used in the house. If the house is of brick, the pillars of the pergola are of brick. A Colonial house demands white turned columns, a stone house calls for informal construction of rustic.

There can be no definite rule for the proportion of a pergola and this is another reason why it should be designed by the architect of the house. The relation of width to height is an important one. Generally speaking the width is greater than the height, but each problem requires different handling. If the garden is long and narrow the obvious place for the pergola is across the end, which would give the garden better proportion and form beautiful boundary for the eye. Pergolas are often used to separate two gardens or built close to the house so that they may serve as a porch.

A pergola is always flat on top, an arbor is generally arched or pointed. Pergolas are without horizontal side beams, while an arbor always possesses them. Occasionally a trellis is introduced between the columns of a pergola to give vines better support, but such trellises are invariably used perpendicularly and never horizontally.

Originally pergolas were used as support for grapevines. People loved to sit under the cool shadow of the leaves, so these garden features soon became recognized gathering places of the family. When used as a support for grapes, a pergola becomes useful as well as distinctly ornamental. No vine wreathes itself in and out of a pergola with more consummate grace than a grapevine. It fills the air with delightful perfume in spring and hangs luscious purple and white fruit within easy reach in the fall. Throughout the summer its silver-lined green leaves offer delightful protection from the sun.

Next to the grape, the rose is the favorite vine for a pergola covering. In the East the Dorothy Perkins is a prime favorite, for it literally covers the walls and roof of the open-air room with beauty and drops its petals daintily upon its human friends resting in its bower. The white and crimson rambler, the sweet pink Queen of Prairie are other good roses

for eastern pergolas. In the West the Gold of Ophir, luxuriant in growth and generous in bloom, seems to have been designed on purpose for this golden land. The Cecil Brunner spreads a profusion of lovely pink blossoms within a very few years. The pink Cherokees, looking like glorified eglantines, climb swiftly, wreathing the columns as they grow, until a pergola under their rule soon becomes an earthly Paradise. White Cherokees are equally vigorous in growth and generous in blossom. Their silky, crinkly petals and glossy, beautifully formed foliage make an ideal covering. Another hardy climber that the Westerners call to their aid when wishing to create a beautiful outdoor room is the Gainsborough. La Marque, Prairie Queen, and Papa Gontier are also dependable and satisfactory varieties.

The wistaria is always good, not only because it makes superb showing in spring with its pendant lavender and white blooms, but because it gives dense shade in summer when most needed. The clematis paniculata is another good vine. Actinida with its interesting white blossoms, the Dutchman's pipe with its weird green flowers, the large-leafed kudsu are all quick growers.

The usual method of planting a pergola is to start a few slow-growing long-lived species and then call upon the annuals for the first and perhaps second year's covering. Annual vines which have been proven to give the best results are the morning glories, ipomœas, ornamental gourds, Japanese hops, canary-bird vine, cobæa scadens, hyacinth bean, wild cucumber and American hop.

Virginia creeper, English ivy, trumpet creeper, jasmine and honeysuckle will grow in some situations when nothing else will. Our native bitter-sweet, though slow growing, is one of the most delightful of all vines for pergola. Its leaves are beautiful in form and veining, and its scarlet and orange berries are decorative in the extreme. They form a network of bright color throughout the winter.

Because pergolas are veritable out-of-doors sitting rooms they must be furnished to make them inviting and comfortable as well as beautiful. As soon as people demand anything, it is supplied. People have asked for furniture such as tables, chairs, settees, benches to be used in pergolas, so constructed that they will endure both burning suns and continued rains. There are now many models in the market.

* * *

The Secret of Good Building

GREAT works of architecture, cathedrals, palaces, town halls, cannot be good where the mass of building is bad. Architecture is only building become conscious of its beauty, and where building is not beautiful that consciousness, and so architecture, is impossible. For a building is not merely a design, it is materials; and there must be a certain general skill and aptitude in using them if the designer himself is to find expression for his design. But this skill and aptitude come with the love of building; they come where men build houses, not only for shelter or gain, but to express themselves, their own taste and enjoyment, as women try to express these things in their clothes. In fact, happiness is the secret of building, and so of architecture. Look at any fine old house in town or country, and you will find that what really pleases you in it is not its conscious art, but the thought that it is a place to be happy in, that those who built it must have been happy. And so it is with beautiful towns. What we enjoy in them is the sense of a desirable state of being, shared and expressed in common; and often there is sadness in our enjoyment because this state seems to be in the past. We ourselves,

and the very inhabitants, are strangers to it; for we cannot make it now, we can only gaze at it and wonder.

It is not that we are peculiarly unhappy, but we have lost the power of expressing happiness in building, as we have lost the power of folk-song. Our artistic houses can only imitate the expressed happiness of the past by a conscious effort. Mouldings now are something added and copied, they are not done naturally and fitly; they express ambition rather than affection. And bow-windows are just bow-windows, not belvederes for happy people to look out into a pleasant street. As for streets, we never expect new ones to be pleasant; we never dream that we might get happiness by walking along them. We preserve beautiful old villages like curios; anything modern would ruin them; and why? Because it would jar upon their past happiness. Artistic cottages among those plain old ones would look restless, self-conscious, anything but happy. We talk about art, but it is not really art that we desire and miss; it is not modern Gothic cathedrals or Palladian town halls; it is the old unconscious kind of building that has the good manners of the heart. And the cathedrals and town halls, in a city where there is not that kind of building, are but the restless swagger of bad manners. They are splendors of architecture that have not been earned by good building first, splendors amid squalor, jewels worn on rags.

We are trying now to build better houses, and they are far better than the houses of thirty years ago; but the best of them are still exceptional, self-conscious, often pharisaic in their effort not to be as other houses are, and, unlike the old houses, most of them are conceived, not from the inside outwards, but from the outside inwards. It is their features that they depend on for their effect. Any good architect will tell you that, if he designs a plain, good house like the old ones, his client, looking at the drawing, will complain that it is too plain. He expects features to show that his house is artistic, and features designed from the outside. He does not wish his house to be like a happy face securely expressive of what is within. But, as we cannot have good cathedrals and town halls unless first we have good houses, so we cannot have good houses of the larger kind until the ordinary run of cottages and small houses is good. The basis of all good building is the houses that ordinary people live in; and now it is, finally, the jerry builder who makes architecture an artificial, almost impossible, art. For the great mass of small houses now are built as commercial speculations—built to let, not to live in. The builder does not think of them as homes; they are to him no more than so many bars of soap to a grocer. How, then, can he be expected to express any kind of happiness in the building of them?

If we are to have architecture again we must begin with these little houses, we must raise the level from the bottom; and that can be done only if the inhabitants of every town resolve to make it more happy by the expression of happiness—if they think of every street in terms of what the outside of the houses expresses of the inside. A common pride and ambition in the town would lead to common effort and sacrifice. Citizens would resent a street that lowered their vitality with its failure to express anything at all, even if they themselves did not live in it. They would see the town as their own, like the inside of their own houses; they would in fact wish to live in it, and not merely to use it. And clearly, since our ancestors could afford to build towns to live in, we can afford it also. It is all a question of what we wish to spend our money and energy on; it is common sense to spend money and energy on the expression of happiness, for that expression makes men happy, and so more full of vitality, more equal even to the purely material business of life.—London Times.

Present Cost of Building Materials

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, August 20, 1919. All prices f. o. b. San Francisco.

Note.—For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $33.00 per 1000 laid.
Face, $80.00 per 1000 laid.
Common, f. o. b. cars, $15.00.
Face, f. o. b. cars, $47.50.
Hod carriers, $7.00 per day.
Bricklayers, $9.00 per day.

Composition Floors—30c. per sq. ft.

Concrete Work (prices at bunkers)—
Rock, $1.75 per yard.
Gravel, $1.75 per yard.
River sand, $1.15 per yard.
Bank sand, 75c. per yard.
Top gravel, $1.90 per yard.
Monterey sand, 60c. per sack.
Cement (Portland), f. o. b. cars, $3.03 per barrel (rebate for sacks, 15c. each).
Medusa cement, $9.50 per barrel.
Forms, $60.00 per 1000.
WAGE—Laborers, $5.00 per day.
Concrete workers, $6.00 per day.
Cement finishers, $8.00 per day.

Dampproofing—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $8.00 and $9.00 per day.

Electric Wiring—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

Excavation—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 per day.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

Glass—
21 ounce, 25c. per square foot.
Plate, 80c. to $1.25 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
WAGE—Glaziers, $8.00 per day.

Hardware—
Nails, $5.25 base per keg.
Deafening felt, $100.00 per ton.
Building paper, $1.50 per roll (1-ply).

Hardwood Floors—
Maple floor (laid and finished), 27c. per foot.
Factory grade floors (laid and finished), 24c. per foot.
Oak (quartered, finished), 35c. per foot.
Oak (clear), 30c. per foot.
Oak (select), 27c. per foot.
WAGE—Floor layers, $9.00 per day.

Lumber—
Common (at building), $55.00 per 1000.
Flooring—

1x3 No. 1	$98.00 per 1000
1x3 No. 2	90.00 per 1000
1x4 No. 1	88.00 per 1000
1x4 No. 2	85.00 per 1000
1x4 No. 3	78.00 per 1000
1x6 No. 1	93.00 per 1000
1x6 No. 2	90.00 per 1000
1¼x4 and 6 No. 1	93.00 per 1000
1¼x4 and 6 No. 2	88.00 per 1000
Slash grain, 1x4 No. 1	72.00 per 1000

Shingles—

Redwood, No. 1	1.40 per bdle.
No. 2	1.30 per bdle.
Red cedar	1.75 per bdle.

Millwork—
O. P., $110.00 per 1000.
R. W., $110.00 per 1000.

Labor—
Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00 per 1000.
Millwork, 25% to 50% of price of millwork.
WAGE—Laborers, $5.00 per day.
Carpenters, $8.00 per day.

Marble—

Columbia	$1.50 sq. ft.
Alaska	1.50 sq. ft.
Tennessee	1.75 sq. ft.
Verde Antique	3.00 sq. ft.

Painting—

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—$10.00 each.

Plastering—

Interior, on wood lath, 60c. per yard.
Interior, on metal lath, $1.10 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Exterior, on metal lath, $1.80 per yard.
Wood lath, $8.00 per 1000.
Galv. (metal lath), 31c. per yard.
WAGE—Hod carriers, $7.00 per day.
Plasterers, $9.00 per day.

Plumbing—

From $70.00 per fixture up, according to grade and quantity.
WAGE—Plumbers, $9.00 per day.

Reinforcing Steel—

Base price for less than car load lots, $4.35 per 100 lbs.
Car load lots, $4.00 per 100 lbs., f. o. b. San Francisco.

Roofing—

Five-ply tar and gravel, $6.50 per square.
Tile, $35.00 per square.
Redwood shingle, $9.00 per square.
Cedar shingle, $10.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

Structural Steel—$150.00 per ton.

Tile—

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.

* * * *

EDITOR'S NOTE.—This department will be made a permanent feature of the magazine, having been inaugurated at the urgent request of subscribers. Additional information will be added from time to time and suggestions that will contribute to the value of the data given will be welcome. Prices naturally are fluctuating in these days of upward tendency, but the quotations given will be found to average about right.

Quantity Survey on Building Work

IN an address before the Seattle Master Builders' Association recently, Mr. F. A. Naramore, City School Architect, and former architect for the Portland (Oregon) School Board, touched on a subject of vital interest to owners, architects, contractors and prospective builders in advocating the use of the quantity survey on building work. He emphasized he was speaking unofficially and merely outlining his own ideas and not those of the School Board as regards the calling of bids on construction work and the award of contracts.

In brief, Mr. Naramore, as a stepping stone to the relieving of contractors of the heavy overhead expense of figuring large construction projects with but a remote chance of eventually being awarded the contract, favored the creation of a building specialist to be known as a quantity surveyor. At the owner's expense this expert would compile an exact list of quantities of materials, which would enter into the construction of the building and bidders would base their figures on this estimate. The contractor would then examine the plans and specifications of the architect and submit a bid for the contract based on the quantity survey. At the opening of bids the lowest responsible bidder would be awarded the contract and should he note any discrepancy in the quantity survey of materials, the original bid submitted would be adjusted to take care of this item.

Mr. Naramore reviewed other systems of awarding contracts, including the cost plus method, but favored the above described system. The idea of obtaining ample competition on all public projects was considered as essential by Mr. Narramore, but he maintained that the considerable amount of figuring required in large enterprises in estimating quantities should be done at the expense of other than the prospective builder as this was only just and fair to all concerned.

* * *

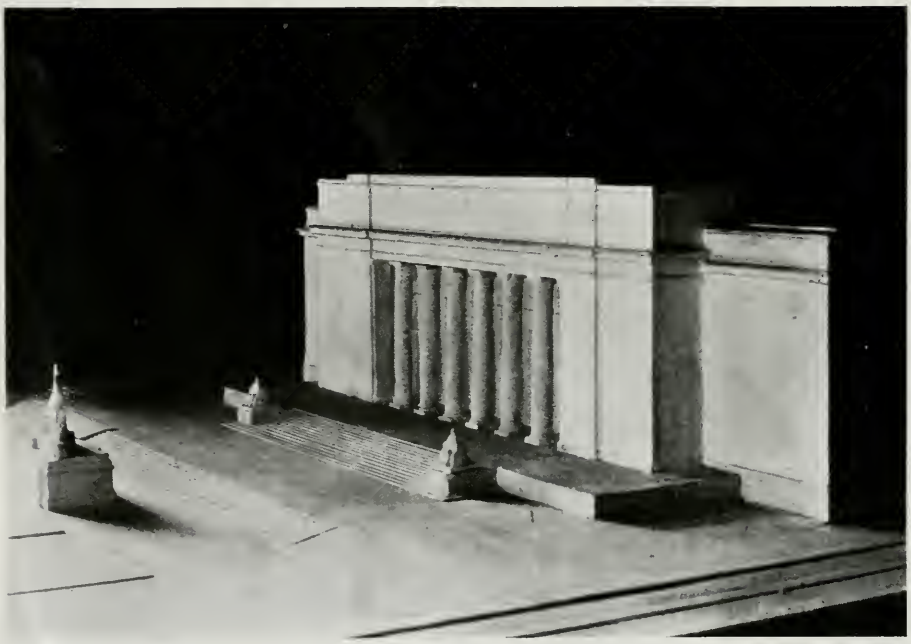
A Stone House Atop of a Skyscraper

AMERICA has given many architectural novelties to the world, but it is doubtful if there has been anything more striking than a structure just planned. This is a 28-room dwelling, a typical country dwelling of the best class, and is to be erected on top of a fourteen-story apartment building, of limestone and granite, at Madison avenue and Seventy-second street, New York.

The house is to be Italian in design, of limestone, 33 feet wide and 93 feet long. It will set back from the walls of the under structure seven feet along Madison avenue and seven feet in Seventy-second street. This seven feet in front and on the side of the house will be laid out in flowers and shrubbery as formally as the space will permit. A high and massive balustrade will mark the outer edge of the front yard of the house and at the same time the top of the apartment house. The dwelling will be carried up two stories without a break in the facade, except at the south end, where there will be an open air sleeping porch. As a sleeping place it will be exceptional, because from it can be seen most of the city to the south, the hills of New Jersey, the plains of Long Island and the network of waterways about the city.

The third floor will be girdled by a heavy stone balustrade. Back of this will be more gardens and inclosures skilfully arranged, which may be used for sleeping porches. The third floor will be carried up to a peaked roof of red Spanish tile. The central portion of the roof will be higher than the ends because under this will be a vaulted music room that will be 30 feet wide and perhaps 50 feet long. There will be twenty-eight rooms in all in this city-country house. It is expected to rent for $30,000 a year.

CLAY MODEL, OPEN-AIR GREEK THEATER, HONOLULU
C. W. Dickey and Hart Wood, Architects



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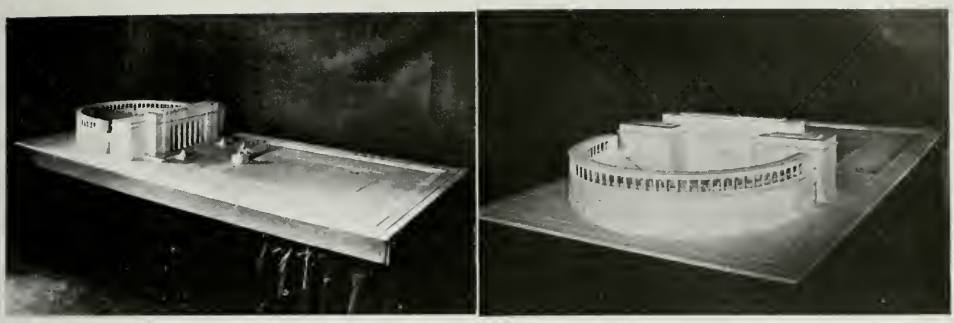

SCALE MODELS, GREEK THEATER, HONOLULU
C. W. Dickey and Hart Wood, Architects

Greek Theater for Honolulu

OF the several pretentious architectural adornments which promise soon to be built in Honolulu, perhaps none is attracting greater interest and more comment than the proposed open-air Greek theater, which is to be the property of the Pan-Pacific Union, composed of representatives of all nations bordering on the Pacific ocean. Subscriptions for its erection, which must amount to at least one million dollars, are now being received and a number of large donations are reported to have been made. The theater will be of concrete construction and will have a building back of the stage for the accommodation of the committee room, exhibition rooms, etc., of the Pan-Pacific Union. The whole will be treated in a monumental way, with a sunken garden and pool in the foreground.

The accompanying pictures are photographs of the model and give a good idea of how the theater will appear when built. A site has already been selected in the Civic Center, facing the Capitol building. Messrs. C. W. Dickey and Hart Wood are the architects.

* * *

Responsibility of the Architect

The responsibility of the architect in relation to the cost of building is the most serious indictment made against him. The question of arriving at costs is extremely difficult due to changes in the market, the varying costs in different sections in which an architect may be called upon to build, the condition of the building market as to contractors anxious to undertake the work, and last but not least, the question of the contractors overhead profits and their estimates on labor required, these three items being subject to wide variations and not subject to any check by the architect.

The owner expects the architect to give a very close preliminary estimate on very meagre data, while it is a known fact that contractors bidding on very complete plans and specifications vary widely in the prices at which they will undertake the work, and these contractors' bids are the final word as to the value of the work.

The only solution seems to be for the architect to put this matter fairly to the public. The use of a quantity survey system should bring about far better economic conditions in the building world.

Errors in plans and specifications are certainly a financial responsibility of the architect to the owner and contractor.—(Extract from Report of Louisiana Chapter, American Institute of Architects, Post-War Committee.)

Is Prosperity Here Now?

By W. B. TURNER

I HAVE received a number of letters lately from agents in various parts of the country asking the same question in about the same way. They all say, "While business is going ahead here now in good shape we are rather anxious to know whether this is purely a local condition or whether conditions in other parts of the country are beginning to change for the better.

I might answer the queries briefly by saying, "Yes, it is true, business is picking up generally the country over," but at the same time it would not go amiss to tell a little bit about the signs by which we recognize this, and the reasons for it as we get them from various sources.

To begin with, these agents' inquiries are rather typical of the general business conditions. Six months ago there was a general feeling throughout the trade that building should go ahead and of course would eventually, but not until a much lower price level had been reached.

Two or three months later I had the privilege of making a trip from one coast to the other and talking to a great many men in the building trade, on this subject. I was very much surprised to find that the individual opinion of the men in the trade itself was, almost without exception, to the effect that there would be no reduction in prices and that it was foolish to hold building up on that account. The opinion was individual, however, and there was a lack of co-ordination between the various factors necessary to start building operations. Consequently, though the individual felt that the wise thing to do was to go ahead and build, these individual opinions had not been discussed enough one with the other to make each man feel sure that his neighbor was of the same opinion.

In a short time, however, entire communities here and there seemed to become sufficiently imbued with the spirit and instead of it being looked upon as a foolhardy undertaking to start building, it was recognized as a shrewd business policy.

The fact that conditions as far as prices are concerned have not changed materially since the first of the year proves that the prime obstacle was more a state of mind—it was a feeling of unrest, or rather uncertainty as to just what was the proper thing to do.

The public is practically at the point of realizing that we must recognize a new price level for everything. It is true that this new price level is not firmly established as yet, but it must be admitted that it is a great deal easier to adjust everything to the price level prevalent in most commodities today than it would be to try and put everything back to the old price basis.

We have come out of the war victorious, primarily because we disregarded traditions and did new things in new ways as conditions demanded them, and it looks to me as if we are starting out on our post-war prosperity in the same frame of mind, new view-points, new standards and new confidence in ourselves.

If I were asked just how I know that business has picked up materially, I would not point to our order sheet first, although that in itself would be good evidence, but I would point to the greater number of actual contracts which are being awarded, to the fact that fewer and fewer contracts are being held up after bids are taken due to high prices, due to the fact that there is a decided stiffening in the steel market with tendencies upward rather than downward, and to the changed attitude of the prospective builder the country over. We are being asked for more and more men by our agents and we are finding it increasingly hard to secure them—we are being pushed harder for

deliveries and our shop is becoming filled up and it is becoming harder to get deliveries from the steel mills. Competition is cleaner and more on a service basis and there is less and less haggling over prices.

Probably the biggest handicap yet to be overcome before the building boom is in full swing is the labor question. This has been serious and has held up work in a number of parts of the country, but even that seems to be working out satisfactorily as fast as adjustments can meet this new high price level.

* * *

Causes of Failure in Slag Concrete

Although well made slag concrete is a very reliable building material, there have been cases where concrete, in which slag has been used as an aggregate, has failed. The chief causes of failure were given by Dr. J. E. Stead in a paper read last June before the Cleveland Institution of Engineers as follows:

(1) The scrimping of the cement, leaving the finished concrete in a very porous condition, which is not serious in constructions above water level, but where fresh or salt water has free passage into or through the concrete is almost certain to cause disintegration—rapidly by sea water and less so with fresh water. Whatever the aggregate may be, porosity in concrete is certain to lead to premature destruction by sea water. (2) to the use of the fines from old slag dumps, which often contain coal ashes and other deleterious substances. It is therefore desirable to riddle off and reject all that will pass a sieve with one-half-inch mesh, or better, the pieces smaller than one inch in diameter. Preferably it is safer not to use anything but pure clean slag. Coal ashes are sometimes present in mixed dumps and contain sulphides of iron, which in presence of air and water produce acid solutions which react on the slag, dissolving a portion of the alumina and lime, producing the aluminium-calcium sulphate, which may cause expansion. Concrete floors and pavements have been known to expand and buckle purely owing to the oxidation of the sulphides and production of hydrated calcium sulphate, and possibly due to the production of the double salt just referred to, particularly in cases where care has not been taken to remove the fine slag, and when the concrete has been porous and kept in a damp condition. It is advisable therefore not to use any fine slag at all for floors exposed to such conditions, but employ ordinary sand instead, and in confined positions, such as the floors of dwelling houses, to refrain from using slag as an aggregate owing to the property slag has of yielding sulphured hydrogen when it is moistened.—Engineering and Contracting.

* * *

Architects Form New Association

A new society of architects has been organized in New York, known as the New York State Association of Architects. It will be independent of existing organizations. All architects registered in the state of New York and all architects whose standing in practice is approved by the board of directors of the association, are eligible to membership. All architectural draftsmen, working in the offices of architects who are members of, or eligible to membership in the association, are eligible to junior membership. Mr. Ornan H. Waltz of Ithaca, is president, and Mr. Walter B. Frank of Utica, secretary of the association.

THE
Architect and Engineer
INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional.

VOL. LVIII. AUGUST 1919 No. 2

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REGISTRATION — WHAT IS THE STATE BOARD DOING?

Oregon, Washington and Idaho have new state laws regulating the practice of architecture and the architects in these states are enthusiastic for its enforcement. How quite the contrary in California, where the law has been on the statute books for a number of years and regarding which there seems to be a growing indifference. At no time in our recollection has there been so little activity on the part of those in control of this department, as now. We recall the days of the late William Curlett and his associates—how active the Northern California Board used to be—how meetings were held with regularity, candidates examined, passed or rejected, and architectural draftsmen who dared pose as registered architects were warned and even prosecuted. Furthermore, the examining board used to furnish the press with a list of candidates who had been granted certificates to practice. This was a splendid idea, serving to enlighten the public and also helping the architect to establish himself as a recognized member of the profession. For the last year or two, however, no names have been issued, although this magazine has requested them of the secretary, Mr. Schnaittacher, on a number of occasions.

Mr. Charles Cressey, a leading architect of Southern California, discussed the enforcement, or rather lack of enforcement of the California laws under the heading, "Registration—An Act Without Action," in the July number of The Architect and Engineer. What Mr. Cressey said is true. He could have said much more. Speaking of the powers of the State Board, Mr. Cressey says:

"Accepting the California act for what it is worth, I think I am expressing a general conviction in saying that architects should and could have greater protection than has yet accrued to the profession, if the State Board exercised its powers or showed even moderate aggressiveness against admitted evils.

"It is argued that the labors of the Board are purely administrative and do not include police duty or the collection of evidence. That is a cold, inactive view of an act, which is either protective, or is just a string of worthless words. If the State Board can only proceed against of-

fenders upon formal complaint and definite evidence gathered by outsiders, that point of view is not generally known or accepted, and a service will be done by stating the fact and inviting cooperation of all interested. Too great a stress appears to be given to the letter of this act and too little attention paid to the power of personal influence and leadership.

"This educational work is a duty and field in which the standing and authority of the State Board of Architecture is not merely essential but is irreplaceable. Neither the A. I. A., the local chapters, nor the most earnest words of the architectural press, can ever give the tone or reach the ears of such a public, as would the broad-minded efforts of a board acting in the public interest as distinct from the interests of architects. There is in this outline an expression of the new ideal in government—not repression, punishment, or interference with the public in class interest—but helpful, truthful leadership, giving service to the many enterprising men and women, who do or may build wrongly, from simple lack of understanding."

If the State Board is to remain a purely examining body, helpless against offenders for want of a more drastic law, then architects are hopeless indeed, and the board may as well be abolished.

NOTES AND COMMENTS

The following notice appeared recently in a San Rafael paper:

School House Piracy

NOTICE TO ARCHITECTS

The Board of Education of the City of San Rafael hereby invites architects to submit preliminary sketches and estimates for a combined school and auditorium building to be erected on the lot at the southwest corner of Fifth and B streets, San Rafael.

The building to be of re-inforced concrete, two stories in height; the first story to contain rooms for a six grade school and kindergarten, with the necessary offices, cloakrooms, and lavatories; the second story to contain the auditorium.

Further details may be obtained from the Clerk of the Board, Roger S. Phelps, Box 59, Brookdale, Santa Cruz County.

To the architect whose sketch meets with the approval of the Board will be awarded the contract of preparing final plans and specifications and supervising construction.

This advertisement was authorized by the Board at a meeting held June 23, 1919. ROGER S. PHELPS, Clerk.

* * *

The above is not unlike other notices that have appeared from time to time in our country newspapers as a bait to the unsophisticated architect who would sell his services for the asking. Let us assume that there will be half a dozen members of the profession who will answer this advertisement, each one offering a sketch or two in accordance with the general conditions laid down in the notice. Possibly there will be one sketch out of the six that will please the Board of Education. In that event its author may be asked to prepare plans for the school at a stipulated commission.

On the other hand, if none of the sketches is satisfactory, there is nothing to prevent the board from engaging an outside architect. Then all the work put in by the six competitors must be charged off the books as profit and loss, mainly loss. The architects, in other words, have sold their talents simply for the asking. And in doing so they have cheapened their profession in the eyes of the layman. The Board of Education has obtained the plans for nothing, and if they happen to contain some good points, as they usually do, the trustees are at liberty to make use of them by instructing their architect to embody this or that feature from this or that plan, giving the "best building possible, from the various schemes presented."

Some day, perhaps, our reputable architects will awake to a realization that this sort of thing is a serious barrier to the progress of the profession and they will decline to make themselves victims of a practice that is little short of piracy.

If a school board wishes plans for a school house, let it hire an architect outright. If it desires a competition, let it go about it the right way.

Communications

The Supervising Architect of the Treasury Department

July 17, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—We are enclosing herewith an article dealing with the Supervising Architect's office of the Treasury, which we hope may be of sufficient general interest to your readers to justify your printing it. As you know, the Supervising Architect's office is one of the functions which it is proposed to place under the National Department of Public Works when and if the movement initiated by the Engineers', Architects' and Constructors' Conference carries through.

Very truly yours,

M. O. LEIGHTON, *Chairman.*
C. T. CHENERY, *Secretary.*

SUPERVISING ARCHITECT'S OFFICE—TO WHAT DEPARTMENT DOES IT BELONG?

The Supervising Architect's office—now subordinate to the Department of the Treasury—is charged with the design, construction, care, operation and repair of Federal buildings which are devoted to miscellaneous government purposes.

The 1918 Report of the Supervising Architect's office listed these buildings, now completed and occupied or authorized, to the number of 1680, the construction cost alone of which was $228,584,378.95. Included in this list of buildings are post offices, custom houses, courthouses, quarantine stations, marine hospitals, assay offices, appraisers' stores, immigrant stations, treasury, subtreasuries, wharfs, barge offices, jails, sanitariums, exposition buildings, monuments and mints.

In the Sundry Civil Bill now before Congress are appropriations for carrying on construction work in 120 different cities and towns, the amounts so authorized, including those set aside for purchase of sites, being approximately $7,300,000.

The amounts involved range from $7,000 for a post office at Front Royal, Virginia, to $849,000 for a building in Honolulu.

The office has two well defined activities: one, "design and construction": the other "the care, operation and repair of buildings now completed." The principal department expenditures are as follows:

Design and Construction, for personal services—Supervising architect; foremen draftsmen; architectural draftsmen, and draftsmen at rates of pay from $840 to $2,500 per year. Computers and estimators at rates ranging from $1,600 to $2,900 per annum.

Structural engineers and draftsmen at from $840 to $2,500 per year. Mechanical, sanitary, electrical, heating and ventilating and illuminating engineers and draftsmen at rates of pay from $1,200 to $2,400 a year—$176,500.

Supervising superintendents, superintendents, junior superintendents and inspectors at rates of pay from $1,600 to $2,900 per year—$206,650.

Contingencies of every kind and description—$489,050.

For the design and construction activities of this office then, $870,000 are required. The personnel consists of strictly technical men conversant with every phase of architecture and engineering. This office conducts more building operations than any other organization in the United States.

So far, the activities discussed have been purely technical ones and there is no apparent reason why they should be performed under other than a technical bureau.

The second phase of the activities of this bureau comprise "Care, Operation and Repair of Public Buildings."

The appropriation provides for this service:

For personal services in connection with care, operation and repair of all public buildings (except as hereinafter provided) including assistant custodians, janitors, watchmen, laborers, and charwomen, engineers, firemen, elevator conductors, coal passers, electricians, dynamo tenders, lampists and wiremen, mechanical labor force in connection with said buildings, including carpenters, plumbers, steamfitters, machinists, and painters—$3,650,000.

This work is engineering work; the men employed are members of the engineering trades. There is still no apparent reason for placing this work under a cabinet officer whose chief concern is with the finances of the Nation.

The other funds provided for this bureau are as follows:

For furniture and carpets and repairs of same; for gas and electric fixtures and repairs of same—$555,000.

For operating supplies:

For fuel, steam, gas for lighting and heating, water, ice, lighting supplies, electric current, telephone services, removal of ashes and rubbish, snow and ice, cutting of grass and weeds, washing towels, etc. For miscellaneous tools and appliances required in operation of mechanical equipment—$2,300,000.

The work of this office, then, is straight architectural and engineering work; its personnel are members of technical professions and trades; its interests are technical interests. It is not a financial bureau but an architectural and engineering one and belongs, not to the Treasury Department, but in the Department of Public Works, where it will include in its functions all other architectural-engineering work of the Government, and thereby coordinate all such Federal activities under a common authority.

Idaho's New Architects' Law

July 29, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—

I am enclosing herewith copy of the laws pertaining to the practice of architecture in Idaho. The administration of this law was changed by the last legislature in that the Department of Law Enforcement assumes the duties of the old Board. However, this Department acts by and with the consent of an advisory committee consisting of three licensed architects, one sanitarian and the professor of engineering of the University of Idaho. All of the professions, of which there are thirteen, licensed in this State, come under the jurisdiction of this department.

Beg to advise that the next examination for architects will be held September 9th.

Please place the name of this Department on your subscription list and forward the statement for same to me.

If this Department can be of any assistance to you in the future, please advise.

Respectfully yours,

ROBERT O. JONES,
Commissioner of Law Enforcement.

Cannot Do Without It

July 23, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—Enclosed please find two dollars and fifty cents to start a subscription with your magazine for one year.

Send to E. R. Barnett, 1203 J street, Sacramento, California. Care of E. C. Hemmings, Architect.

You are getting out such a fine magazine that I cannot get along without it.

Yours very truly,

E. R. BARNETT.

PROGRAM OF AN ARCHITECTURAL COMPETITION

For a One-story Hollow Title House to Cost not Exceeding Five Thousand Dollars

The competition will be conducted by the Los Angeles Pressed Brick Company, under the auspices of the American Institute of Architects, and is open to all architects, designers and draftsmen of California and Arizona.

The competition closes at 5 p. m., Wednesday, October 15, 1919. The prizes will be as follows: 1st—$500.00 cash; 2nd—$250.00 cash; 3rd—$150.00 cash; 4th—$100.00 cash; 5th— First Honorable Mention; 6th—Second Honorable Mention; 7th—Third Honorable Mention; 8th—Fourth Honorable Mention.

PROBLEM: The design of a one-story house, exterior walls of which are to be of 8-inch hollow tile, and the roof of which is to be of clay tile.

The total cubage is not to exceed 16,500 feet, inclusive of porches, basement and roof spaces; and the actual cost, complete, is limited to $5,000, inclusive of heating, plumbing, electric wiring and painting

The house is to be located on a level, inside suburban lot with an eastern frontage of 50 feet and a depth of 150 feet. Building restrictions fix the front main wall of the house at not less than 35 feet from the front property line, and not less than 5 feet and 10 feet respectively, from the side property lines. Access to the garage must be provided from the street.

The plan of the house must be suitable to a family of moderate means, and must comprise at least five rooms. Two of the five rooms must be sleeping rooms.

The house is to be built in a semi-tropic climate, and this fact must be well considered, both in the plan and exterior design. Otherwise the architectural treatment and the plan arrangement are left entirely to the option and ingenuity of the contestant.

TWO DRAWINGS REQUIRED: One drawing showing an accurately-constructed perspective of the house, at a scale of ¼ inch to the foot, and a detail of the front entrance at a scale of ¾ inch to the foot.

One drawing comprising a floor plan and lot plan, at a scale of ⅛ inch to the foot; a basement plan at a scale of ⅛ inch to the foot, and a detail wall section from footings up to and including the cornice at a scale of ¾ inch to the foot. On this sheet also must be an accurate itemized estimate of the cubage. In connection with the floor plan, the entire development of the lot is to be shown, indicating walks, drive, garage, planting, etc. Graphic scales are to be shown, in all cases, in connection with the subjects to which they apply.

Both drawings must be entirely in undiluted black India ink, on Whatman's hot-pressed, or similar, drawing paper. Both must be exactly 20 inches by 24 inches in size, over all, with a plain border line drawn 1 inch from the outer extreme edges, making the size within the border exactly 18 inches by 22 inches.

Each drawing is to have the general title:—"Design for a One-story Hollow Tile House to Cost $5,000.00." The drawings are not to bear any motto, device or distinguishing mark, nor shall they be signed with the name of the designer.

BASIS OF CUBAGE ESTIMATE: The cubage of the house proper shall be the actual number of cubic feet enclosed between the outer faces of exterior walls and between the finish grade line, or basement floor line, and the outer surface of the roof. Open-sided roof porches and pergolas are to be allowed for at one-fourth their actual cubage, while unroofed porches or terraces in connection with the house are to be allowed for at 1½ cubic feet per square foot of area. The total cubage shall be the sum of the above parts and must not exceed 16,500 feet.

CAUTION: The cubage and probable cost of each design will be carefully checked before the awarding of the prizes, and any design that exceeds the stipulated limiting cubage of 16,500 ft. or on the other hand, that is within the cubage limit but yet would obviously exceed in cost the stipulated sum of $5,000, will forfeit any chance of award. It is the intent of this competition to produce a house, or houses, that can actually be built for $5,000, and between any two prize-winning designs within the limiting cubage and of equal architectural merit, that one which, in the opinion of the jury, will cost the least, will receive the larger prize.

DELIVERY OF DRAWINGS: The drawings are to be sent flat, either by mail, express, or messenger, prepaid, without the contestant's name or address on the package or drawing, to the Los Angeles Pressed Brick Company, Fourth Floor, Frost building, Los Angeles, Cal., arriving there not later than 5 p. m., Wednesday, October 15, 1919. In the upper left-hand corner of the package shall be lettered: "Competition Drawings for a One-story Hollow Tile House." Enclosed in the package with the drawings is to be a sealed envelope bearing the name and address of the contestant. Drawings and accompanying sealed envelopes containing the authors' names shall be numbered upon receipt, the envelopes remaining unopened until after the award of the prizes.

The cash-prize drawings are to become the property of the Los Angeles Pressed Brick Company, and they also reserve the right to exhibit or publish any or all of the others.

Non-prize-winning designs and honorable-mention designs will be returned to the contestants, prepaid, as soon as possible after the awarding of the prizes.

Awards will be announced in "The Southwest Builder and Contractor" and in "The Architect and Engineer" as soon as a decision is reached by the jury of award, and prizes will be granted immediately thereafter.

Store Buildings

Mr. William H. Crim, Jr., has recently let contracts for two new store buildings, one on Mission street and one on Post street, near Hyde, San Francisco. Plans have just been completed for two other store buildings, one for Mr. M. F. Cowen on Front street, San Francisco, and the other in Richmond, for Mr. W. H. A. Alfs. The total cost of all four buildings is close to $60,000.

Auto Depot for San Jose

Messrs. Foley and King are the owners of a reinforced concrete passenger station and store building, which will be erected on the corner adjacent to the city hall, from plans being prepared by Mr. Warren Skillings, Garden City Bank building, San Jose. The building will cover an area of 137½x75 feet and will cost $40,000.

$13,000 San Jose Home

Messrs. Wolf and Higgins, architects of San Jose, are preparing plans for a $5500 house to be erected in Oakland for Mrs. G. E. Harrell, 449 N. Thirteenth street, San Jose. They have recently awarded a contract for $13,800 for a two-story residence on Third street, San Jose, for Mr. G. W. Ryan.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Personal

Messrs. Albert R. Walker and P. A. Eisen have formed a partnership and will maintain architectural offices in suite 1402-1404 Hibernian building, Los Angeles. Mr. Walker has been engaged in architectural practice in Los Angeles for the past ten years. He was a member of the firm of Walker & Vawter, which designed the Bible Institute. Mr. P. A. Eisen has peen practicing architecture for thirteen years, being at one time associated with his father in the firm of Eisen & Son, and more recently being engaged in business independently.

Partnership heretofore existing between Mr. H. B. Douglas and Mr. Fay R. Spangler, architects of King City, has been dissolved. Mr. Spangler has opened offices for the practice of his profession in the Jones building, Santa Maria, and will be pleased to receive literature and samples from the building material houses. Mr. Spangler is preparing plans for a business men's club building at Santa Maria to cost $65,000.

Lieut. Charles H. Biggar, architect, who served with the U. S. Engineers overseas, has returned to Bakersfield, Cal, and will resume the practice of his profession, associated with Mr. Thomas B. Wiseman. Lieut. Biggar was at the front in the Argonne Drive. After the armistice he spent some time in Paris studying at the Beaux Arts.

Mr. A. C. Denman, Jr., president and general manager of the Southern California Iron & Steel Co., has been appointed a member of the board of fire commissioners of the city of Los Angeles by Mayor Snyder and the appointment has been confirmed by the city council.

Mr. S. E. Sonnichsen, architect, formerly in the Downs building, Seattle, and Mr. Harold Ginnold, architect, who has maintained offices for some time in the Seaboard building, have opened offices together on the fourth floor of the Boston building, Seattle.

Mr. Walter Parker, formerly of Parker & Kenyon, architects, has returned to San Francisco after nearly two years in the service. He is temporarily in charge of the drafting force in the office of Mr. Frederick H. Meyer.

Mr. Mel I. Schwartz, formerly member of the firm of Heiman & Schwartz, architects, has returned from France and resumed the practice of architecture with offices in the Nevada Bank building, San Francisco.

Mr. George W. Harding, former Los Angeles engineer, is now associated with Mr. Albert J. Mazurette of Modesto, as architectural engineer. He is superintending the erection of a large reinforced concrete garage in Modesto.

Mr. John Galen Howard, who recently returned from France, has moved his architectural office from 604 Mission street to the First National Bank building, San Francisco.

Mr. A. R. Johnson, head draftsman for Mr. Frederick H. Meyer, is taking a three months' vacation. Mr. Johnson will spend some time at Mr. Meyers' country place at Dutch Flat.

Mr. Edward A. Miller, Pacific Coast architect, who has for the past eleven years conducted most of his business from his residence in Portland, has opened offices at 518 Henry building in that city.

Mr. R. L. Robertson, architect, 207 Orpheum building, Seattle, died recently at his home after an illness of nearly two months. He was 68 years old and a native of England.

Mr. Robert D. Farquhar has returned to Los Angeles and will again establish his offices and resume the practice of architecture. Mr. Farquhar entered the Red Cross service during the war.

Mr. E. Francis Williams, architect, has moved from 435 Chamber of Commerce building, Portland, to 1031 the same building.

Mr. Lester H. Hibbard, who closed his architectural offices to engage in war work, has returned to Los Angeles and reopened offices at 632 Metropolitan building, Los Angeles.

Mr. Paul A. Needham, formerly of Los Angeles, as now located in Berkeley. He has plans for a number of residences on the boards.

Mr. Richard V. Gough, architect of Seattle, has decided to locate at Okanogan, Washington.

Mr. Otto Janssen is now located at Phoenix, Ariz. He will appreciate catalogs and price lists of building materials.

Geo. A. Dodge

The tragic death on July 31 of Mr. George A. Dodge, a former practicing architect in San Francisco, was a shock to his many friends, and his loss is keenly felt by the building interests of the Bay cities. Mr. Dodge was killed in an automobile accident near Stockton. His companion, Mr. Robert Oliphant, manager of the Ralston Iron Works, was seriously injured. Their auto was struck by a Southern Pacific passenger train.

Mr. Dodge was formerly associated with Mr. J. W. Dolliver. Among the buildings which the firm designed is the Redwood City Court House and the Odd Fellows hall in San Francisco.

For the past two or three years Mr. Dodge has been connected with the Building Material Exhibit at 77 O'Farrell street, first as assistant manager and at the time of his death as manager. He worked indefatigably to make the Exhibit a success and his efforts had just begun to show signs of achievement when his death occurred.

Two $30,000 Residences

Mr. Clarence A. Tantau, Clunie building, San Francisco, has completed drawings and taken figures for a $30,000 frame and brick veneer residence on the northeast corner of Vallejo and Buchanan streets, for Mr. B. F. Schlessinger.

Mr. Sidney B. Newsom, Nevada Bank building, is preparing plans for a $30,000 residence, swimming pool, garage, etc., in the Crocker Highland tract, Piedmont. The owner has a large acreage which he intends to beautify with trees, shrubbery, walks and landscape gardening.

Warehouse and Apartments

Mr. Louis M. Gardner, 942 Pine street, San Francisco, has completed plans for a four story brick warehouse to be built on the west side of Second street, near Bryant, San Francisco, for Mr. C. W. Withengton. The building has been leased by the Geo. W. Caswell Coffee Company. Mr. Gardner has also prepared preliminary drawings for a five story class C apartment house to be erected on Geary street, west of Leavenworth, for Mr. Dennis Sullivan.

Two Office Buildings

Two office buildings are being designed for San Francisco by Mr. W. H. Ratcliff, Jr., Berkeley architect. Both are for Mr. George Billings. One will be a three story structure, 45x98, on the north side of California street, East of Front, and the other will be two stories and situated on the South side of California street, East of Front street. The two buildings will represent an investment in excess of $100,000.

Architect of Marysville High School

At least half a dozen architectural firms in San Francisco, Los Angeles, Oakland and Sacramento sought the commission to design Marysville's proposed $250,000 High school building. Mr. William H. Weeks of San Francisco proved the successful competitor and he has been instructed to proceed with the working drawings with all possible speed. Mr. Weeks has also been commissioned to prepare plans for a $35,000 gymnasium at Sebastopol, bonds for the amount having been unanimously voted. The gymnasium will be constructed of reinforced concrete. Mr. Weeks will also design the new High School building at Hollister, for which a bond election for $150,000 has been authorized.

To Rebuild Country House

Mrs. Jack London is to rebuild the London country house at Glen Ellen, Sonoma county, which was destroyed by fire some time ago. The original London house was designed by Mr. Albert Farr. The new plans are being made by Mr. Harry Merritt, who is also planning a large apartment house for Mrs. DeWolfe and Mrs. Brownlee in California street, East of Taylor, San Francisco.

Oakland Architects Busy

Messrs. Miller and Warnecke, Perry building, Oakland, have prepared plans for an apartment house for Lakeshore avenue, a church in Oakland and a garage for the U. S. Government at Benicia arsenal. They will also design the proposed new hotel in the Yosemite Valley which will be built in 1920—21.

Addition to Bank Building

Plans are being completed by Mr. Frederick H. Meyer for a three story class A addition to the Union Trust building at Market street and Grant avenue. Mr. Meyer is also drawing plans for a three story frame apartment house on Pine street, near Leavenworth, for Mr. Louis Shensen.

$18,000 Country Home

Messrs. Coates & Traver, Rowell building, Fresno, are preparing plans for an $18,000 home to be built at Selma for Mr. S. L. Heisinger. The owner will have his own water supply and ice-making plant, also a swimming pool. The house will be constructed of hollow tile.

Mr. Bakewell Returns

Mr. John Bakewell, Bakewell & Brown, architects, has returned to San Francisco after an absence in France of nearly two years.

Some Big Hotels Planned

Representatives of the Bowman Hotel Company of New York, owning and operating hotels throughout the country, have been on the Coast investigating sites for new hostelries in San Francisco, Los Angeles, Seattle and Tacoma. In the party were Mr. James Woods, former manager of the St. Francis hotel, San Francisco, now right hand man of Mr. John McE. Bowman, president of the Bowman interests, and Mr. Charles D. Wetmore, of the New York firm of hotel architects, Warren & Wetmore.

Mr. Bowman is going into the Pacific Coast hotel business to connect his Eastern hotels with others of the same character on the Coast. His present investment represents $70,000,000 and these new hotels will increase it by $60,000,000.

$300,000 Seaside Hotel

The present Seaside Hotel, Portland, Oregon, after it has undergone a complete remodeling, is to be but one wing of an "E"-shaped structure to be erected at a cost of $300,000 by the Seaside Hotel corporation. Messrs. Johnson & Parker, architects, U. S. Bank building, Portland, have completed the drawings for the structure, which is to be one of the finest beach hotels north of California. The building will be 300 feet in length with wings 70 feet long.

Architects Move

Messrs. Louis M. Upton and Milton Latham, architects, have moved from 111 Ellis street, San Francisco, to 454 Montgomery street, San Francisco. Plans are being prepared by them for a large country house at Pebble Beach to cost $25,000. It will have nine rooms, four baths and separate garage with chauffeur's quarters.

Residence and Club House

Mr. James A. Magee, architect in the Phelan building, San Francisco, has prepared plans for a two-story plaster exterior residence to be erected in Salinas, Monterey county, for Dr. W. P. Austin, at an estimated cost of $12,000.

Mr. Magee has also made sketches for a women's club building to be erected in Salinas at an estimated cost of $15,000. It will seat about 400.

$65,000 Apartment House

Mr. C. O. Clausen, Hearst building, San Francisco, is completing working plans for a six story class C apartment house to cost $65,000. The same architect has let a contract for a two story plaster residence on 21st avenue, San Francisco, for Mr. O. A. Anderson to cost $7500.

Architectural Examiner Appointed

Governor Louis F. Hart of Washington has appointed as members of the state board of examiners to administer the new architects' license law, Mr. Louis Baeder, secretary of the Washington State Chapter of the American Institute of Architects; Mr. A. Warren Gould, both of Seattle; and Mr. A. J. Russell of Tacoma. The law was passed by the last Washington legislature.

Noted City Planner Here

Mr. Charles Moore of Washington, D. C., chairman of the National Commission of Fine Arts and member of the National Planning Commission, recently passed several days in San Francisco and was entertained part of the time by his friend, Mr. Willis Polk. Mr. Moore is writing a book on the history of city planning. He is an enthusiastic admirer of the work of the late Mr. Daniel H. Burnham.

Office Building Alterations

Mr. Norman R. Coulter, architect, has completed plans for alterations to the fifth floor of the Maskey building, San Francisco. This and the sixth floor are to be used for the increasing business of the Maskey Candy Company. Mr. Coulter has finished the drawings and bids are being taken for a one-story reinforced concrete school building at Potter Valley, Mendocino county. Bonds amounting to $20,000 have been voted.

Six Story Office Building

Messrs. Julius Krafft and Son, Phelan building, San Francisco, have plans complete for a six story and basement class A office and loft building for the Wellman Estate Company. It will be erected in Jackson street, between Drumm street and the Embarcadero and will cost $100,000. A sprinkler system will be installed.

Licenses Issued to Architects

Licenses to practice architecture have been issued by the State Board of Architecture (Southern California Division) to the following: Messrs. Edward B. Rust, 529 Black building, Los Angeles; Clarence E. Noerenberg, 1751 Buckingham road, Los Angeles; Clark Phillips, 3110 East Fifth avenue, Long Beach; James H. Hoose, 2105 Twenty-third street, Bakersfield; and Clarence Lee Jay, 1520 Burchett street, Glendale.

Luncheon for Returned Architects

The San Francisco Society of Architects gave a luncheon in July for two of its members—Messrs. John Galen Howard and John Baur, who have returned to the practice of their profession after extended absence in the government service.

PROSPECTS

This department is intended to assist architects and engineers in obtaining a line on new work. So far as known, no plans have been prepared for any of the work mentioned, at least not at the time of writing.—Editor.

CONCORD.—Mr. M. E. Lyon, owner of the Concord Inn property, was in town last week looking into the proposition of building on the site that has been occupied only by ruins since the fire of over two years ago.

MONTEREY.—Three new grammar school buildings are to be erected in the Monterey School District, bonds amounting to $100,000 having been voted. The schools will be at Monterey, New Monterey and Oak Grove.

PORTERVILLE.—Major D. G. Nairn has purchased 80 acres of orchard property in the National Development Colony, south of Porterville. He contemplates building a fine country residence.

HAYWARD.—The Hayward Board of Trustees have agreed to take steps to acquire a municipal water system and build a town hall, for which a bond issue will be held in September. It was decided to invite architects to submit plans for a town hall to be discussed at a future meeting. The town hall will cost about $40,000.

CHICO.—Messrs. William Allen and Harry Davidson will establish a motor car, also a service organization representing an outlay of $50,000, at Seventh and Main streets, where a building will be erected for them by the Breslauer Estate.

Dehydrating Plant

Plans have been completed for a large dehydrating plant to be erected at the intersection of Race street and the Southern Pacific tracks, San Jose, by Mr. S. J. Spoelstra, at a cost of $50,000. The architects are Messrs. William Binder and E. N. Curtis. The building is to be of reinforced concrete and will be exceptionally well lighted with skylights and numerous metal frame windows. The general offices will be on the second floor.

Hollow Tile Residence

Messrs. Walker & Eisen, 1402 Hibernian Building, Los Angeles, are preparing plans for a large one-story patio style residence to be erected on Olive Hill, Hollywood Boulevard, and Vermont Avenue, for Miss Aline Barnsdall, Merritt Building, Los Angeles.

Appointed County Engineer

Mr. E. P. Ball has been appointed Napa County Engineer by the Board of Supervisors. This is a new office created by a State law that recently went into effect. Mr. Ball will have supervision of all the road and bridge work in Napa county.

Architect Sues for Fee

Mr. W. L. Schmolle, Burlingame architect, has filed suit in the superior court against Mr. Samuel McClure, a contractor, for the sum of $1,234.82 which he claims represents a balance due him for preparing plans for a hotel in South San Francisco for Mr. Frank Fusco.

"Builders' Day" at Big Basin

The "Builders' Day" suggested by Mr. Clarence F. Pratt, President of the Pratt Building Material Company of San Francisco, promises to be a big affair. Many organizations, such as the San Francisco Architectural Club, Plasterers' Association, Team & Auto Truck Association, and the Mason and Builders' Association, have agreed to suspend business and go down to Big Basin on September 6th and 7th for a couple of days' outing. It is expected that the Builders' Exchange, the General Contractors' Association, all the lumber companies, as well as architects and contractors, will close their offices Saturday, the 6th, for the entire day.

Mr. Pratt expects to have $1,000 in prizes for various events and already one-half of this has been donated by members of the building industry. The prizes are for building merchandise and range from $2.00 up to $50. There are two $45 prizes, two at $25, two at $20, etc. There will be tug-of-war, fat men's race, best dancing contests, etc. But the real attraction will be the forest play, "The Soul of Sequoia," produced on Saturday night, September 6th, in a natural amphitheatre, by the Sempervirens Club of California. It is estimated that at least 1000 builders, architects and material men will attend the forest play and the Builders' outing.

Court House Competition

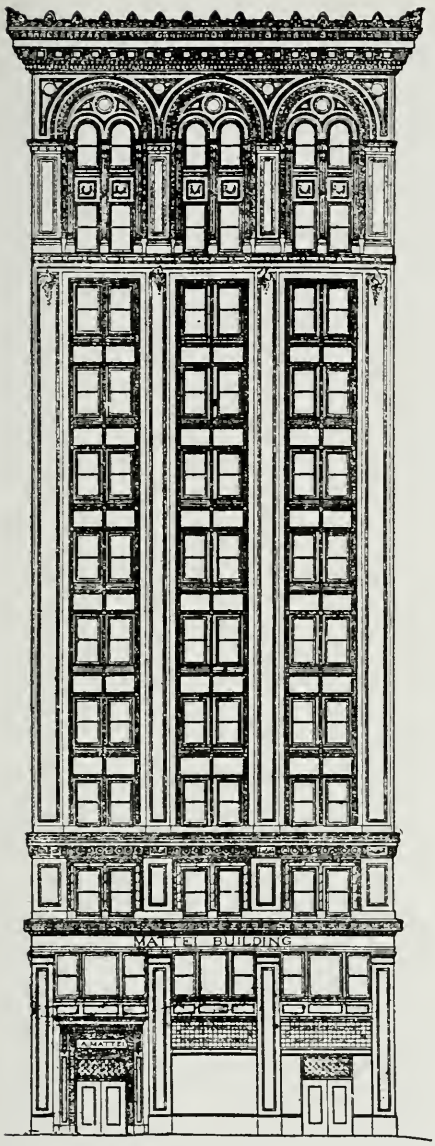
Eleven sets of plans for the proposed new court house, auditorium and museum to be erected by Santa Barbara county as a war memorial, were submitted in a competition conducted in accordance with the rules of the American Institute of Architects. Four prizes were offered, the first being awarded to Mr. Edgar A. Mathews of San Francisco, the second to Mr. Wm. Mooser and Mr. Horace G. Simpson of San Francisco, the third to Messrs. Bliss & Faville of San Francisco, and the fourth to Mr. F. E. Brewster of Santa Barbara.

Theater and Apartments

Messrs. Wm. Curlett & Son, 517 Merchants National Bank Building, Los Angeles, have taken new bids for the erection of a two-story and basement theater, apartment and store building at Tucson, Ariz., for the Congress Realty Co. The theater will accommodate about 1250 people; there will be nine store rooms and twenty apartments, divided into two and three-room suites.

Packing House Addition

Messrs. Allison & Allison, 1405 Hibernian Building, Los Angeles, have prepared plans for an addition to the packing house at Santa Paula, owned by the Santa Paula Citrus Association. The addition will be 100x100 ft.



OFFICE BUILDING, FRESNO
E. Mathewson, Architect

Twelve-Story Office Building

Construction of a twelve-story, terra cotta and reinforced steel frame business building at J and Fresno streets, Fresno, at a cost of $400,000, which will be the tallest building between San Francisco and Los Angeles and which will be completed by September 15, 1920, was recently announced in Fresno by Mr. E. Mathewson, architect for Mr. A. Mattei, owner of the property.

Ice cold water in all rooms is to be a feature of the most modern building in Central California. The structure will be 150x50 feet, will contain over 225 offices, and will have its own electric and water plant.

Work of wrecking the buildings now on the site will begin September 1 and the structure will be completed in a year. The building will front 50 feet on J and 150 feet on Fresno streets. There will be four elevators, three passenger and one freight and twenty-one offices will be on each floor.

Oregon Architects Granted Certificates

The Oregon Board of Architect Examiners has approved the names of 35 practicing architects, 18 of whom have already received their certificates and the balance will be issued as soon as they are received from the printers. The total number of applications received by Mr. Geo. M. Post, secretary, to date is fifty-six.

Architects who have received certificates or who have their names approved by the board follow:

Messrs. Geo. M. Post, Portland; W. C. Knighton, Portland; J. E. Wicks, Astoria; W. G. Chandler, Marshfield; M. H. Whitehouse, Portland; Lee A. Thomas, Bend; D. L. Williams, Portland; E. F. Lawrence, Portland; L. L. Dougan, Portland; W. M. Whidden, Portland; Fred T. Webber, Portland; C. A. Houghtaling, Portland; W. F. Tobey, Portland; Ione Lewis, Portland; E. F. Williams, Portland; H. C. Whitney, Portland; John V. Bennes, Portland; A. Sutton, Portland; Edw. A. Miller, Portland; Chas. D. James, Portland; Edgar M. Lazarus, Portland; Fred S. Allyn, Portland; O. R. Bean, Portland; L. H. Hoffman, Portland; Ernest A. Kroner, Portland; Edmund Bergholtz, Portland; A. H. Smith, Portland; C. L. Goodrich, Portland; Folger Johnson, Portland; F. Manson White, Portland; Emil Schacht, Portland; Jos. Jacobberger, Portland; R. R. Bartlett, Astoria; R. W. Hatch, Pendleton; A. C. Jenkins, Albany; John W. Wilson, Portland; Floyd Archibald Naramore, Seattle.

$75,000 Milk Plant

Mr. E. C. Hemmings, architect, with offices in the Strand Theatre building, Sacramento, has prepared plans for a $75,000 reinforced concrete milk plant for the Salinas Valley Dairymen's Association at Soledad, Monterey county, California. Contract for the building has been let to the Clinton Construction Company of San Francisco.

Mr. Hemmings has also prepared plans for a $15,000 passenger depot to be built at Marysville for the Sacramento Northern railroad. It will have hollow tile walls and cement exterior. The depot will adjoin the new $25,000 brick freight depot, plans for which were drawn by Mr. H. O. Brown, the railroad company's chief engineer.

Former Californian Successful in the East

Mr. F. J. Herding, formerly draftsman for Mr. R. A. Herold, architect of Sacramento, is now a member of the firm of Conzelman, Herding & Boyd, architects, engineers and town planners, St. Louis. Mr. Herding has been making a tour of the Coast cities on his way back to St. Louis, after a business trip to Arizona. His firm has been commissioned to prepare plans for a mining town in Arizona and as soon as the drawings have been developed he will show them in this magazine.

Designed Electrical Plans

An interesting point inadvertently omitted in the description of the electrical features of the new Southern Pacific building in the July issue of the Architect and Engineer, is the fact that the plans for the work were prepared by Mr. Charles T. Phillips, consulting engineer, with offices in the Pacific building, San Francisco.

Another Auto Plant for Oakland

The Scripps-Booth Motor Car Company has announced its intention of building a large assembling plant on the Foothill Boulevard, Oakland. The buildings will be of reinforced concrete.

State Building Being Figured

Plans have been approved and the State Department of Engineering, Sacramento, is advertising for bids for the structural steel and iron work for the new State building in the San Francisco Civic Center. The building will cost $1,350,000. The work is to be let in segregated contracts.

Addition to Office Building

A three-story addition is planned for the Firemen's Fund Insurance building at California and Sansome streets, San Francisco. Mr. Lewis P. Hobart is the architect. Plans have been drawn by the same architect for a $20,000 country home for Mr. C. W. Ditton, to be built in San Mateo Park.

Merced School

All bids received for the construction of a new high school at Merced have been rejected and the work will be readvertised. Messrs. Allison and Allison of Los Angeles are the architects.

University Building

Plans are being prepared by Mr. Fred A. Legg, of Salem, for the Lausanne hall, to be built at the Willamette University, Salem, and which will accommodate 125 young women.

Engineers Interested in Big Hetch Hetchy Dam

THE new reinforced concrete dam which the city of San Francisco is to build as a part of the great Hetch Hetchy water supply system, from plans by City Engineer M. M. O'Shaughnessy, will be the largest structure of its kind in California. It will cost approximately $5,500,000. The Utah Construction Company has been awarded the contract.

The dam will be peculiar in shape due to its position between the towering walls of Hetch Hetchy gorge.

Its height above the bed of the Tuolumne river will be 226½ feet and its foundation will extend down below the stream bed 75 feet to solid granite bedrock.

At the crest the dam will be long and thin as compared to the lower part. Its length at the crest will be 600 feet, and its width 15 feet.

At stream-bed the dam will be only 100 feet long, due to the converging walls of the gorge on either side, but its width, or depth at this point, will be 240 feet.

The thickest point of the dam below stream-bed will be 320 feet, an offset of 80 feet occurring just at stream-bed. This is made in case the dam is ultimately increased in height, which may be done without increasing the size of the foundation.

The construction of this dam will impound a reservoir seven miles long and half a mile wide, ultimately creating a lake containing 364,000 acre feet of water.

Reduced to a household term, this means 112 billion gallons. The capacity will not be reached, however, at present construction, the height of dam now being bid on impounding only 204,000 acre feet, or 66 billion gallons.

The dam will contain 370,000 cubic yards of masonry and its construction will require 60,000 cubic yards of excavation for foundation. Nine hundred days are allowed the contractor for completing it, following the signing of the contract. A bonus of $200 a day is allowed for each day the contractor gains on the contract time, the limit of the bonus paid being set at $60,000. A penalty of like amount is demanded for all overtime required in the dam's construction.

All material is to be furnished by the contractor, but the city reserves the right to furnish cement at $5 a barrel at the dam site if this is deemed advantageous. Construction material will be hauled to the dam over the city's standard gauge railroad of 68 miles from Hetch Hetchy junction. The city also will furnish all power from its hydroelectric plant at Early Intake.

The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Rental Charges for Construction Equipment

THE largest and most successful general contractors are adopting a policy of returning all important standard plant and equipment no longer required on a particular piece of construction to a general or branch storehouse, where it is repaired and put into condition for the next job, and of charging a standard rental price for its use against each contract. The Associated General Contractors of America is now making an investigation of rental charges for the use of such equipment with a view to establishing a standard equipment rental schedule. It is readily apparent that such a schedule would be of great value in helping to standardize costs in making estimates. In the July monthly news letter of the association, two schedules of rental charges, submitted by two representative construction firms, members of the association, are printed. These schedules and the contract forms are as follows:

RENTAL AND OTHER CHARGES FOR CONTRACTOR'S EQUIPMENT

Construction Equipment.—The contractor will supply all construction equipment of every description for the proper handling of the work. For such construction plant or parts thereof as the contractor may own or furnish, rental will be charged at the rates mentioned below, and such construction equipment will be carried on the contractor's regular payrolls for this work and as a part thereof at these rates, or as otherwise specified below for each and every working day, also for Sundays and holidays, if used. In the event of the Contractor's equipment being used for a longer period of time per day than the regular working day an additional pro rata charge of the scheduled rates will be made for such overtime as each item is used.

The duration for which rental will be charged, except as otherwise provided below, is from the time contractor's equipment is loaded on cars for shipment to the work, as shown by the shipping manifest, until contractor's equipment is loaded again for return to the contractor, unless other conditions are agreed to in writing, Sundays and holidays excepted unless used.

Charges for the use of such construction equipment as it is desirable or necessary for the contractor to rent from outside sources will be made in accordance with the bills rendered by the suppliers of such equipment, together with all expenses in connection therewith for which the contractor is liable.

Repairs.—Contractor's equipment will be shipped in good operative condition, and charges for ordinary replacement of parts or other repairs necessitated during the progress of the work will be billed at cost of such replacement or repairs. On rented equipment charges for repairs will be in accordance with the agreement with the owners of such equipment.

Small Tools.—Under this item are to be included all tools used, not scheduled below, including carts, wheelbarrows, shovels, picks, bars, wrenches, axes, drills, wire cables, ropes, rubber boots and similar items, and a charge for the use of same will be made as a lump-sum equal to two and one-half per cent (2½%) of the total amounts of the Contractor's payrolls for this work.

Teams.—All teams used for and on this work will be charged for and carried on the payrolls at the prevailing local rates.

Transportation.—Trucking, freight, express and all other such items as may be incurred for the delivery to the work and reshipment back to the contractor of all contractor's equipment and all labor and expense in connection therewith, and for the putting together, setting in place and moving, together with the dismantling, moving and reloading of all items of contractor's equipment for this work, will be billed in addition to the other charges mentioned above.

RENTAL CHARGES PER DAY FOR EQUIPMENT AS MENTIONED IN THIS CONTRACT

Equipment.	Eastern Construction Co.	Western Construction Co.
Adding and listing machines, Burroughs No. 301	$ .30	$ .20
Adding and listing machines, special types at	Special prices	
Automobile trucks and trailers	Special prices	
Back filler, power driven	7.50	6.00
Boiler and 3-drum engine	6.00	4.50
Boiler and 2-drum engine	5.00	4.50
Boiler and 1-drum engine	3.50	2.50
Boiler only, 30 hp. and smaller	2.50	1.50
Boiler only, 30 to 80 hp.	4.00	2.50
Boring machine, pneumatic	.75	.50
Boring machine, electric	.75	.50
Bucket, tipple and bottom dump	.40	.30
Bucket, orange peel, ¾ and 1 yd.	6.00	2.00
Bucket, orange peel, less than ¾ yard	3.50	1.00
Bucket, clamshell, 1 yd.	3.50	1.50
Cars, skip, 1½ yd.	.50	.25
Cars, skip, 3 yd.	1.00	.50
Cars, steel, 1 yd. and smaller	.25	.15
Cars, wooden, 4 yd.	.50	.50
Cars, wooden, 6 yd.	1.50	.75
Cars, wooden, 12 yd. and larger	Special prices	
Cars, 1 yd. hopper, radial gate	.50	.25
Compressor, large sizes	Special prices	
Compressor, 10x10, with steam engine	4.00	2.75
Compressor, 8x8, belt driven engine	2.00	1.25
Compressor, small, with gasoline engine on wheels	5.00	4.00
Compressor, large, with gasoline engine on wheels	10.00	6.00
Compressor, Westinghouse, 9½ in., single action	1.50	1.00
Compressor, Westinghouse, cross compound	3.00	2.00
Counterweight drum	1.00	.30
Crusher only	4.00	2.50
Crusher with elevator and screen	5.00	3.00
Cutter, bar portable, with motor	4.00	2.75
Derrick, 60 to 85 ft., wooden	3.50	2.00
Derrick, 30 to 59 ft., wooden	2.50	1.50
Derrick, less than 30 ft.	1.50	1.00
Derrick breast	.40	.30
Derrick, circle swing	.40	.30
Derrick, steel, 80 to 90 ft.	6.00	4.00
Drill rig, auto traction	15.00	7.50

Drill, small air	.75	.50
Drill, steam	1.50	1.25
Drill, Duntley electric track drill, 550-volt	3.00	2.00
Elevator, platform or bucket	.50	.50
Elevator, with bins for concrete	.75	.75
Engine, skeleton, 3-drum	4.00	3.00
Engine, skeleton, 2-drum	3.00	2.50
Engine, skeleton, 1-drum	2.00	1.50
Engine, steam, horizontal, 11 to 40 hp.	2.50	2.00
Engine, steam, upright, to 10 hp.	1.00	.65
Engine, gasoline, to 8 hp	1.00	.65
Engine, gasoline, 10 hp	2.00	1.00
Engine, derrick, swinging	1.00	.75
Engine, 2-drum, with electric motor	7.00	4.00
Excavator, Keystone No. 3	30.00	15.00
Ford automobiles and light 4-cylinder cars	5.00	3.00
Hammers, riveting	.50	.50
Hood elevating machine, hand power	2.00	.75
Leveling instrument, engineers'	.50	.30
Locomotive, 36 in. Dinkey	7.50	5.00
Locomotive, standard gage, saddle tank	Special prices	
Mixers, with boiler and side loader	7.00	5.00
Mixers, with boiler	5.00	3.50
Mixers, with electric motor, to 1 yard	7.00	5.00
Mixers, without boiler, less than 1 yd.	3.50	2.00
Mixers, without boiler, 1 yd. and larger	5.00	3.50
Mixers, with gasoline engine, 11 to 15 ft. capacity	4.00	3.00
Mixers, with gasoline engine, less than 11 ft.	2.50	2.00
Motorcycle	2.00	1.00
Motors, 2 hp	.30	.20
Motors, 5 hp	.75	.40
Motors, 10 hp	1.00	.70
Motors, 25 hp	2.00	1.50
Motors, 50 hp	4.00	3.00
Motors, larger sizes, per hp., per month	....	2.00
Pile hammers, steam, up to 2,500 lb.	4.50	3.75
Pile hammers, steam, larger than 2,500 lb.	7.00	5.50
Pumps, centrifugal, 10 in., belt driven	5.00	2.50
Pumps, centrifugal, 10 in., with motor attachment	7.00	4.00
Pumps, centrifugal, 8 in., steam connected	4.00	3.00
Pumps, centrifugal, 6 in., steam connected	3.00	2.25
Pumps, centrifugal, 4 in., steam connected	2.00	1.50
Pumps, duplex and triplex, to 3 in.	1.00	.50
Pumps, triplex and belt drive	.50	.50
Pumps, Pulsometer, to 4 in.	1.00	.60
Pumps, Pulsometer, 4½ in. and larger	2.00	1.00
Pumps, with gasoline engine	2.50	1.00
Pumps, diaphragm	.50	.30
Pumps, diaphragm, with gasoline engine	1.50	1.00
Rail, per ton	.12	.08
Roller, horse	1.50	1.00
Safe Cabinets, with fillers	.50	.30
Saw benches, plain	.50	.50
Saw benches, plain, with motor or gas engine attached	1.00	1.00
Saw table, railway cut off, no power	2.50	2.50
Saw, automatic feed, no power	1.00	1.00
Saw, swing cut off, no power	.50	.50
Saw, Elliot wood worker, with motor	2.50	2.50
Saw, band, for iron, no power	7.50	7.50
Scale boxes	.50	.50
Scraper, wheel, 1 yd.	.50	.50
Sprinkling cart	2.00	1.50
Steam roller	10.00	10.00
Steam shovels, revolving, traction	30.00	15.00
Tamps, compressed air, for track	.75	.75
Transit	1.00	.50
Trench diggers, to 24 in. width	30.00	15.00
Typewriters	.20	.20

Fuels and lubricants not included in these prices.

Contractor Bid System Wrong

By J. B. WARRACK *

DURING the past few years any one acquainted with the business of the general contractor or builder has undoubtedly heard remarks by disgruntled bidders on building construction which, if printed, would cause the publisher's arrest. Builders and engineers are human like every one else and they have been made the victims of a most vicious system; the system of calling for bids on work which will not proceed for one reason and another; calling for bids on work that is "fixed" to go to a certain bidder; calling for bids just to find out how much the work is going to cost, and finally, calling for bids to be used as a guide for day labor construction.

Most people outside of contractors and their associates are entirely unaware of the fact that when they award a contract for the construction of a building they are paying their bit for the cost of estimating all the work the contractor failed to get for the above reasons. The contractor must make the cost of conducting his business as well as his profit out of the buildings which he constructs and the cost of figuring without recompense on the jobs which are not awarded to him is a considerable portion of the cost of his business.

The service rendered by a contractor is of as much importance in the construction of a building as the drawing of the plans by the architect and in some cases more important. Such being the case, the service should be paid for.

Under the present system of securing estimates of building cost, the contractor is often required to furnish service for which he receives no pay.

Owners and architects call for as many bids on a job as they please, whether or not they really intend to build, and much of the time of contractors is taken up in unprofitable estimating of building costs.

I know of one case where forty bidders were given plans on which to figure, where five bids would have been sufficient. Forty contractors spent their time on this job, which amounted to approximately $25,000, and took at least five days for each bidder to estimate properly. The material dealers sent 40 quotations on various items to the 40 contractors and probably every sheet metal shop, plumber, electrician, sash and door factory, and lumber yard in the Pacific Northwest was troubled with a dozen requests for prices on the work.

The time and energy consumed by the contractors and material men in figuring on this work was at least eight times that really required to obtain a sufficient number of competitive bids, and

* President Northwest Master Builders' Association and member Warrack Construction Company, Seattle.

at least 39 of the contractors were out the time and expense devoted to the work of supplying figures.

There is only one way to correct this vicious system, and that is for the owner or prospective building investor to pay for what he receives, to pay the bidders on his job for the labor in making up an estimate of cost of the work, whether the contract is let or not. The owner or investor would then get as much competition as he was willing to pay for, and the cost would be met by the proper party in place of being saddled on other people who build.

Where is the efficiency in this method, and who pays?

The ultimate consumer, of course, foots the bill. The contractors add the cost of this work to the buildings which they construct.

Personally, I favor the adoption in Seattle of the system of paying contractors for bids embodied in the plan of H. W. Nelson, of Moline, Ill., followed by the contractors in that section.

The owner or architect calls for bids from such contractors as he desires to compete, then 10 days after the bids are all in, whether or not the contract has been awarded, the owner is obligated to pay each bidder whose bid does not exceed by more than 25 per cent the amount of the bids upon which the contract is awarded, or the lowest legitimate bid if the contract is not awarded, a fee arrived at by taking the square root of the average of all bids received multiplied by seven-tenths. In case the average of bids should be $90,000, the fee arrived at under this system would be $210 for each contractor, not an exorbitant fee for the work involved or for the service rendered.

This system works out so as to cover the contractor's cost of figuring jobs, large and small, without any hardship to the owner.

* * *

For many years building contractors have contended that architects should prepare bills of materials for each building, so as to reduce the contractors' expense of estimating the cost. If the Nelson method were universally adopted, it would inevitably lead to the making of a "quantity survey" of each building by the architect or engineer in charge of it, in order to reduce the payment by the owner to each contractor invited to bid.

Unit Construction Company

The Houghton Construction Company, formerly the Van Saant-Houghton Company, has closed its business and its equipment has been taken over by the Unit Construction Company, with offices in the Phelan building, San Francisco.

The company has under way the construction of a 25-stall engine house for the Denver Rio Grande Railroad at Soldiers Summit, Utah, and is lining with concrete the San Fernando tunnel of the Southern Pacific Company.

Brick Church Building

Mr. H. M. Patterson, 325 O. T. Johnson Building, Los Angeles, has completed plans for the foundation and basement part of the new church building to be erected at Eagle Rock City for the Eagle Rock Presbyterian Church, and work on this portion of the building has been started.

Reinforced Concrete Garage

Messrs. Morgan, Walls & Morgan, 1124 Van Nuys Building, Los Angeles, are preparing plans for a four-story reinforced concrete commercial garage building to be erected on the southeast corner of Eleventh and Flower streets, Los Angeles, for Mrs. Susanna H. Van Nuys. The building will be occupied by Mr. W. P. Herbert, distributor of the Cleveland car.

Architect Returns From France

Mr. William I. Garren has returned from France, where he served with the Railway Engineers' Corps, and has resumed the practice of architecture with Mr. Irving J. Morrow, with offices in the Chronicle building, San Francisco.

HARDWOOD HEADQUARTERS

ASH-BASSWOOD-BIRCH
AROMATIC RED CEDAR
COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
- QUARTERED OAK -
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-CIRCASSIAN WALNUT
LUMBER--TIMBER
HARDWOOD FLOORING
WYBRO VENEERED PANELS
DOWELS-TREENAILS-VENEERS

WHITE BROTHERS
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SEVENTY-SIX years of experience and of ceaseless effort to improve its products has developed The Stanley Works into the largest manufacturers of wrought steel hardware in the world.

On these two pages is reproduced a photograph of the main offices, principal factory and warehouses of The Stanley Works at New Britain, Conn. Other factories are located at Bridgewater, Mass., and Niles, Ohio. Branch offices and warehouses are in New York and Chicago. In all, these great plants cover 52 acres and employ 3000 workmen.

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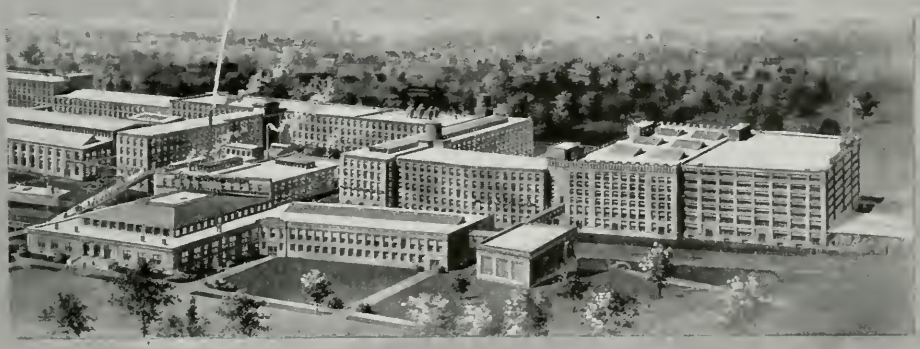

Butts for Permanence"

Contractors Seek to Eliminate Abuses

An effort is being made by the General Contractors Association of San Francisco, to eliminate some of the undesirable practices which have crept into the contracting business, such as procuring bids merely for information, changing the method of doing the work after bids have been taken, refiguring to bring in new competitors and asking an unreasonable number of bids on alternative propositions.

Registration rules have been adopted by the association providing for the manner in which bids shall be taken and governing the members in submitting them. These rules require that the owner, architect or agent calling for bids must decide at the outset whether the work is to be done by general contract, segregated contracts or on a percentage basis, and he will then be expected to conform to his original decision. Contractors must submit bids to the secretary of the association in duplicate, one for record in the office, the original bids to be delivered by the secretary to the person asking for them and opened and read in the presence of the secretary and as many of the bidders as may be present. No bids other than those submitted by the secretary shall be considered. No job may be refigured except by the original bidders and then only when substantial changes have been made in the plans or specifications.

Members are prohibited from registering bids for any job when not requested to do so but they are not prohibited from legitimately soliciting an opportunity to figure work. Contractors asked to estimate work to be done on a percentage basis are protected by requiring contractors asked to figure work to first ascertain from the secretary whether the job is clear. Contractors are also required to protect bids secured from specialty contractors and prices obtained from material men. Not more than three alternative figures may be submitted on any job and unit prices may be given only for excavating, pile driving, concrete foundations and steel tonnage. After a job has been started the method of doing the work shall not be changed unless the joint arbitration board finds a change advisable.

Convention Auditorium

A $160,000 project has been proposed for immediate erection of an amusement and convention auditorium at Spokane, Washington. The building is to be a one-story structure with terra cotta front and full basement. The building will be 109 by 155 feet and will be of brick and reinforced concrete. Mr. F. W. Westcott has been engaged as architect.

OAK FLOORS
(For Everlasting Economy)

Really, a handsome floor adds as much of the feeling of welcome, the sense of having arrived in a restful haven as any single element in a room. OAK FLOORS rest much of their high repute upon their peculiar effectiveness in this regard.

Since, in addition, OAK FLOORS are most durable, are easily cleaned and are certainly not costly, why not specify OAK FLOORS in your churches? Where is their charm more desirable?

May we assist you in selecting the proper grade and finish? It will be a pleasure.

OAK FLOORING
MANUFACTURERS' ASSOCIATION
1016 ASHLAND BLOCK: CHICAGO:

No More Broken Backs Sawing Wood

The old back-breaking method of cross-cutting timber, with its aches and pains that, all through the years, has been the bane of the workers who converted logs into lumber and cordwood, and otherwise made it ready for market, is now a thing of the past. The portable power drag-saw is the machine that has revolutionized wood-cutting. It is the benefactor and friend of the industrious man who has been wearing his life away in the forest wielding the ax or pulling the cross-cut saw. Instead of the muscle of the human this machine is operated by an engine fed upon gasoline, and instead of four or five cords of wood a day, the capacity of a strong man, the machine will cut from fifteen to thirty cords, according to the size of the timber and facilities for reaching it.

The lightweight drag-saw can be moved and operated on the log by one man and carried from log to log by two men. It is used extensively by ranchers, wood-cutters, loggers and contractors, and wherever timber is cut in short lengths.

About five years ago the first practical lightweight saw appeared on the market. Substantial improvements have been made since that time. Harron, Rickard & McCone of San Francisco and Los Angeles, distributors for the Beaver Drag-Saw, advise us that the factory is equipping the machine with a 4-cycle engine, and the demand for this new machine is so strong that the factory is already several months behind with deliveries. The new engine can be used on any kind of work, as well as sawing wood, where not over four horsepower is required. It is a real portable power plant.

Designers of Santa Fe Depot, San Bernardino

By an unfortunate error credit for designing the Santa Fe depot at San Bernardino was inadvertently given to Messrs. Bakewell & Brown, architects of San Francisco, in the advertisement of the Los Angeles Pressed Brick Company, on page 135 of the June number of The Architect and Engineer. Messrs. Bakewell & Brown designed the Santa Fe depot at San Diego, but had nothing whatever to do with the plans for the San Bernardino depot, the latter having been designed by the Architectural Bureau of the Santa Fe, Chief Engineer's Department, Los Angeles.

Apartment House Number

The September issue of The Architect and Engineer will be an Apartment House Number. Examples of some of the best apartment buildings on the Pacific Coast will be shown, with working drawings and floor plans. Mr. J. F. Dunn, San Francisco architect, will contribute an interesting article on Residence Apartments.

Robert W. Hunt & Co.

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Structural and Engineering Materials

Chemical and Physical Testing Laboratories

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St. Louis San Francisco Mexico City
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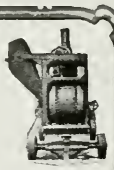
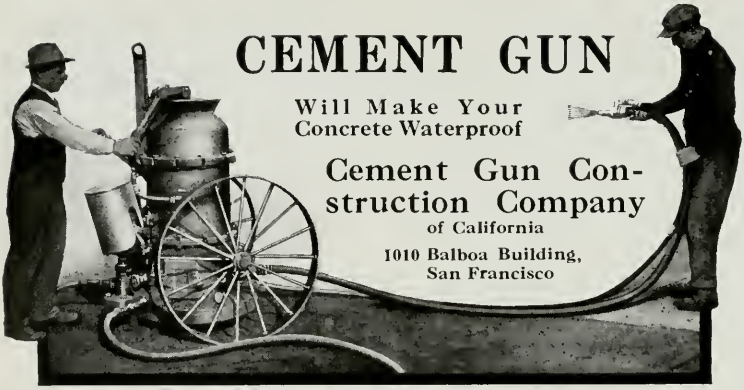


EQUIPMENT

OF ALL KINDS
FOR THE

CONTRACTOR



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DAMS
RESERVOIRS
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CEMENT FLUMES
use the
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SPEED
ECONOMY
PERMANENCE

California Wall Beds

"The California Wall Bed" is the name of an attractive brochure published by the American Automatic Lock and Lift Company, manufacturers and distributors of a wall bed which is said to be not only a California product, but a bed adapted to California comfort and California architecture. No bungalow is too small nor apartment house too large to take advantage of this space-economizing fixture. The California wall bed can be furnished in brass, steel or wood and finished to correspond with the furniture or trim of any room.

Architects interested in the "California Bed" will be mailed a copy of the booklet free upon request. Various half-tone illustrations show the different types of beds manufactured, and other pictures show some of the apartment houses that have been equipped with California Wall Beds. The main office of the company is at 72 Fremont street, with display rooms at 77 O'Farrell street, San Francisco.

Garage and Sales Building

The Kern County Motor Company, sales agent for Nash and Oakland cars, has effected a deal for the construction of a $40,000 garage and sales building in Bakersfield, from plans by Mr. Thomas B. Wiseman.

Large Machinery House in San Francisco

The Smith-Booth-Usher Company of Los Angeles, one of the oldest and largest machinery houses on the Pacific Coast, has opened offices in the Rialto building, San Francisco.

The rapidly growing business of this company made necessary this new departure. The Smith-Booth-Usher Company was established in 1893 and its business now extends throughout a wide Western territory. Messrs. H. A. Olds and J. A. Kinead, for many years prominently connected with the company in the South, are in charge of the San Francisco house.

It is the intention of the company to give a very complete service along the line of contractors' equipment, mining and oil field equipment, cotton gins and cotton seed oil mills.

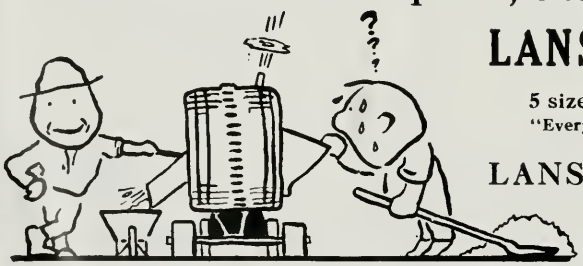
Ample warehouse facilities have been secured.

$40,000 Hospital Building

Mr. E. E. McClaran, architect, Lumber Exchange building, Portland, Oregon, has completed plans and specifications and bids have been received for the erection of three buildings two of which are to be built at Klamath Falls and the other at Goldendale, Washington.

The larger of the buildings is to be a three-story brick hospital at Klamath Falls for Dr. Warren Hunt.

SURPRISED at the quick, thorough work of



LANSING MIXERS

5 sizes — A complete stock
"Everything for the Contractor"

LANSING COMPANY

SAN FRANCISCO,
CALIFORNIA

Southern California Steel Company to Build New Plant

The Southern California Iron & Steel Co. of Los Angeles, will erect a new plant at Huntington Park, according to announcement made by Mr. A. C. Denman, Jr., president and general manager of the company. Growth of the company's business has necessitated the building of larger quarters.

The new site comprises 25 acres on the Salt Lake Railroad at the junction with the Whittier line of the Pacific Electric Railway, extending north to Slauson Ave. and east to the city boundary of Huntington Park. The new plant will represent an investment of approximately $1,750,000. About a year will be required to erect and equip the new buildings and the present works will be moved gradually to the new location.

Eight buildings will be erected, including a large open-hearth mill, machine shop, nut and rivet shop, forge shop, galvanizing building, two large warehouses and an office building. The foundations of the mill structures will be of concrete, the frames of steel and the sides of corrugated iron. The output of the new plant will consist principally of merchant bars, round, square and flat; angle iron, bolts, nuts and rivets. The plant for making bolts, nuts and rivets will be the largest of the kind in the West.

Designs Many Garages

Mr. Clay N. Burrell, Oakland architect, reports the following new work:

Hotel at Marysville, to cost $250,000.

One-story brick and steel garage, 80x120 feet, Piedmont avenue and Broadway, Oakland, for Mr. Wm. Greuner, to cost $24,000.

Garage, 50x100, opposite Mosswood Park, on Broadway, Oakland, to cost $10,000.

Warehouse for the Pacific Wire & Steel Company, at Twenty-sixth avenue and East Twelfth street, Oakland, to cost $25,000.

One-story brick and stucco garage at Twenty-ninth street and Broadway, Oakland, to cost $11,000.

One-story brick machine shop, 100x115 feet, adjoining the Key Route Inn, Oakland, for Mr. C. P. Elliott. Cost, $16,000.

Big Money for Highways

State: Bond issue for $40,000,000 voted.

Fresno county: Bond issue for $4,800,000 carried.

Imperial county: Bond issue election for $1,500,000 carried.

Merced county: Bond issue for $1,250,000 carried.

San Diego county: Bond issue for $2,000,000 to be voted.

Sonoma county: Bond issue for $1,640,000 carried.

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Corner detail of Southern Pacific Depot at Berkeley, California. J. H. Cristie, Architect.

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Corrugated Culverts

Armco Iron Culverts

CALIFORNIA has voted $40,000,000 for new highways and many of the counties and cities in the Golden State have authorized a further expenditure of several million dollars for street work.

The Federal Government and all the States in fact are getting under way a colossal road-improving era. Upwards of one-half billion dollars will be spent in 1919 on some two million miles of roadway. By 1921 it is estimated that fine, up-to-date roads will be available for ninety per cent of the national population. Better drainage means better roads.

The best culverts obtainable should be the concern of every highway and railroad engineer. Those which have proved best under all conditions of service are Armco Iron Corrugated Culverts (galvanized). The corrugations make possible unusual strength, elasticity and resistance to shock. The rust-resisting properties of Galvanized Armco Iron—*the purest iron made*—guarantee a culvert of great lasting qualities.

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Armco Iron Corrugated Culverts are shipped from the factory all ready to install. They can be hauled, unloaded and put up in place with great ease and speed. They can be rolled into the trench without danger of breaking. Once in place, all is needed is to apply the coupling band, tamp the earth up to the center of the pipe, and fill the rest of the ditch in the usual way. No cumbersome hoisting machinery required. Labor costs are cut to the bone.

NO INTERRUPTION OF TRAFFIC

The ditch can be opened and filled in the same day, because the corrugated construction permits the installation of an Armco Iron Culvert in one

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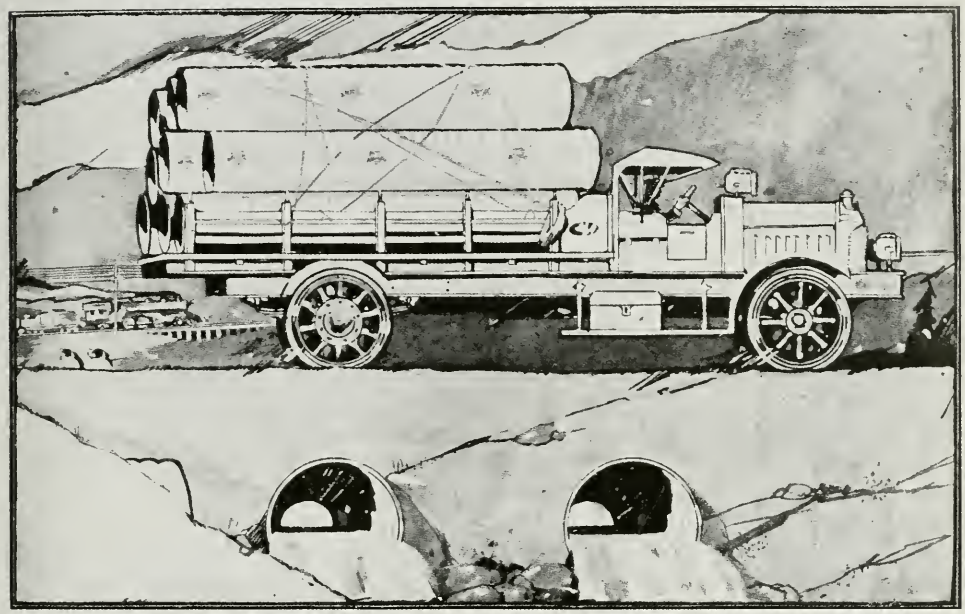

for Permanent Roads

half of the road while the other half is being used. When the first half is completed, it is filled and tamped, providing passage for traffic while the remaining half is installed.

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Armco Iron Culverts successfully withstand shifting foundations, the pounding and jarring of heavy traffic, freezing and thawing, floods and droughts. They are adapted alike to the paved highway and the rough-and-ready dirt road. With equal facility, they carry fills made with stone, concrete, earth or sand.

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There is an Armco Iron Culvert manufacturer in practically every State in the Union. The headquarters of the Armco Iron Culvert and Flume Association is located at 608 S. Dearborn Street, Chicago, Ill. They will gladly give you any information about comparative costs of installations.

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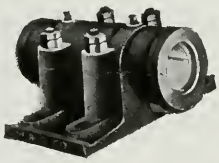

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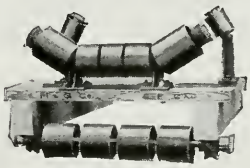

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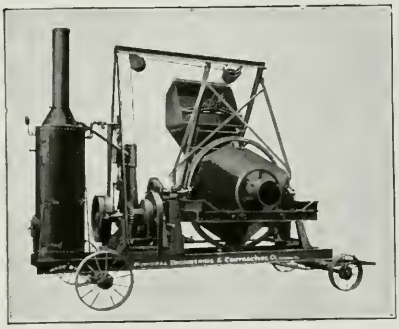

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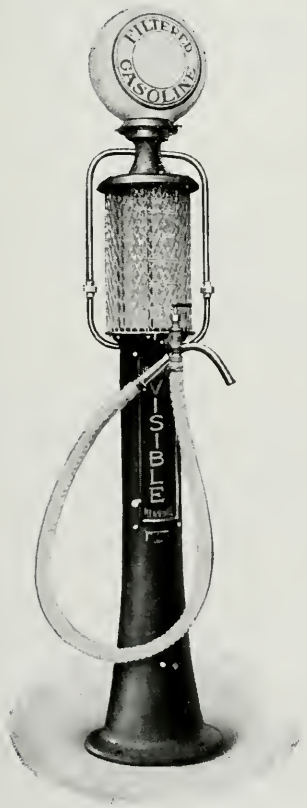

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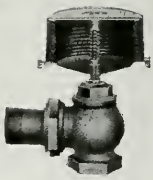

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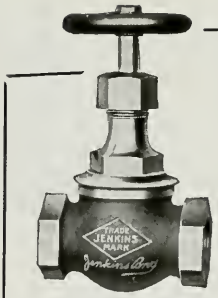

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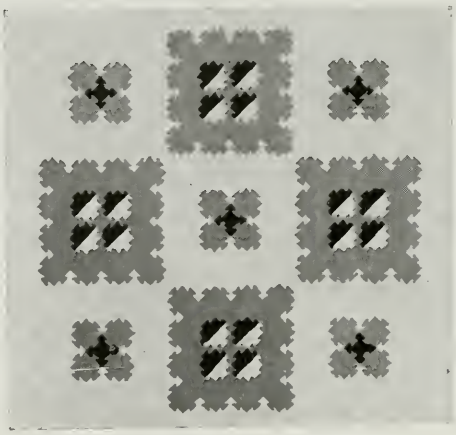

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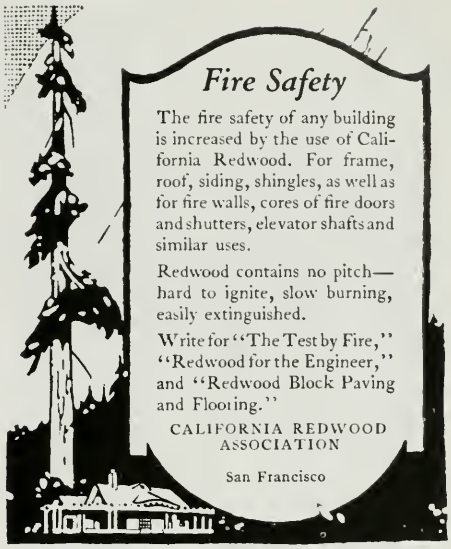

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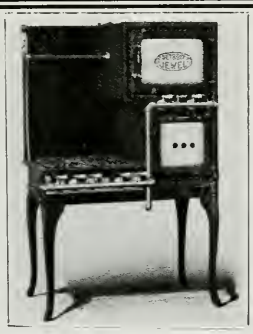

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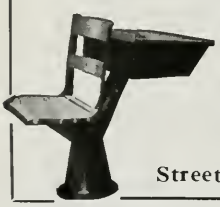

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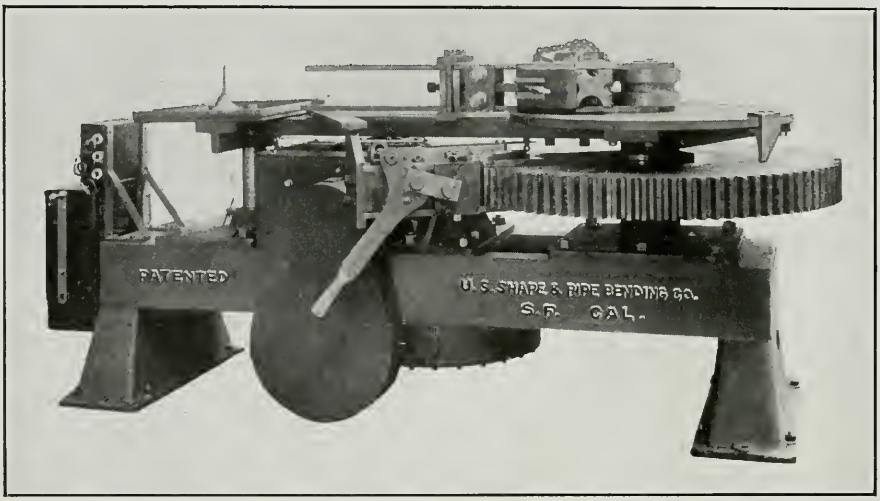

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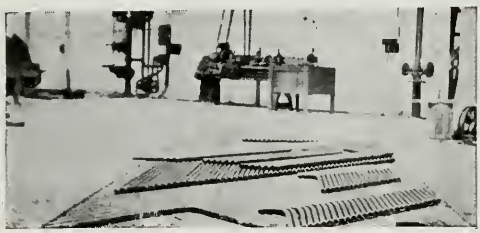

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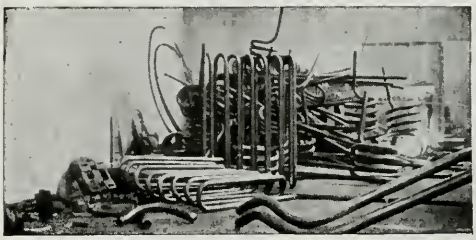

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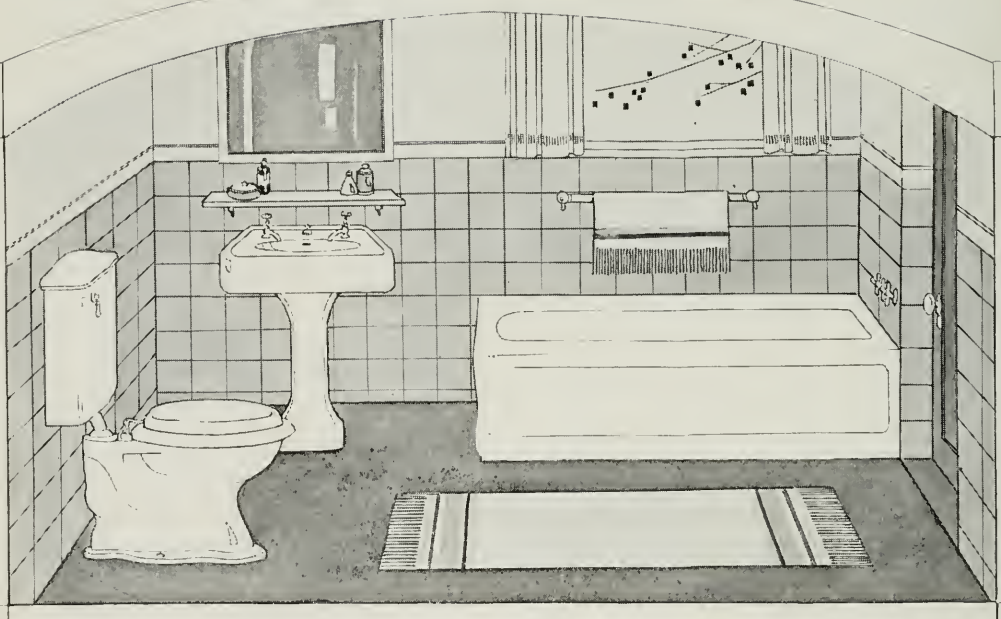

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CEMENT
- Atlas Portland Cement Co., New York and Chicago. (See advertisement for Coast Distributors.)
- Mt. Diablo, sold by Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.
- Standard and Santa Cruz Portland Cement Companies, Crocker Bldg., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., Underwood Bldg., San Francisco.
- Old Mission Portland Cement Co., Mills Building, San Francisco.

CEMENT EXTERIOR FINISH
- Concreta, sold by W. P. Fuller & Co., all principal Coast cities.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies Oakland, Los Angeles, Portland, Tacoma, Spokane; and Pacific Building Materials Co., 525 Market St., San Francisco.
- The Paraffine Companies, Inc., 34 First St., San Francisco.

CEMENT EXTERIOR WATERPROOF PAINT
- Armorite, sold by W. P. Fuller & Co., all principal Coast cities.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, manufactured by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
- Paraffine Paint Co., 34 First St., San Francisco.
- Medusa White Portland Cement, manufactured by Sandusky Cement Co., represented in San Francisco by Pacific Building Materials Co., 525 Market St., San Francisco.

CEMENT FLOOR COATING
- Fuller's Concrete Floor Enamel, made by W. P. Fuller & Co., San Francisco.

CEMENT GUN
- Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.

CEMENT TESTS—CHEMICAL ENGINEERS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

CHURCH INTERIORS
- Fink & Schindler, 218 13th St., San Francisco.
- Mullen Manufacturing Company, 64 Rausch St., San Francisco.
- Home Manufacturing Company, 543 Brannan St., San Francisco.

CHUTES—SPIRAL
- Haslett Warehouse Co., 310 California St., San Francisco.

CLAY PRODUCTS
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.
- H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr, of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
- Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
- Steel bars sold by W. S. Wetenhall Co., 725 Second St., San Francisco.

CONCRETE SURFACING
- "Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Herbert Beckwith, 412 Call-Post Bldg., San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Cement Gun Construction Company of California, 811 Balboa Bldg., San Francisco.
- R. W. Littlefield, 565 Sixteenth St., Oakland.
- Unit Construction Co., Phelan Bldg., San Francisco.
- Larsen, Sampson & Co., Crocker Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- A. D. Collman, 110 Jessie St., San Francisco.
- Del Favero & Rasori, 110 Jessie St., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GENERAL CONTRACTORS (Continued)
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Sharon Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Lansing Company, 338 Brannan St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., Rialto Bldg., San Francisco, and 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CORK TILING, FLOORING, ETC.
Beaver Cork Tile. Sold by W. L. Eaton & Co., 812 Santa Marina Bldg., San Francisco.

CRUSHED ROCK
California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
Butte Engineering Co., 530 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.

ELECTRICAL CONTRACTORS (Continued.)
NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER
The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
Sierra Electric Company, 515 Market St., San Francisco.
Garnett, Young & Co., 612 Howard St., San Francisco.

ELEVATORS
Otis Elevator Company, Stockton and North Point, San Francisco.
Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
Chas. T. Phillips, Pacific Bldg., San Francisco.
Hunter & Hudson, Rialto Bldg., San Francisco.
Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
John Ringius, 252 Townsend St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
Palm Iron & Bridge Works, Sacramento.
Western Iron Works, 141 Beale St., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
General Fire Extinguisher Company, 453 Mission St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
Gladding, McBean & Co., Crocker Bldg., San Francisco.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
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FIRE RETARDING PAINT
The Paraffine Companies, Inc., 34 First St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
The Fink & Schindler Co., 218 13th St., San Francisco.
Mullen Manufacturing Co., 64 Rausch St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
Mangrum & Otter, 827 Mission St., San Francisco.
W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
Standard Varnish Works, Chicago, New York and San Francisco.
R. N. Nason & Co., San Francisco and Los Angeles.
The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
H. N. McNab, 2307 17th Ave., Oakland.
Parrott & Co., 320 California St., San Francisco.
White Bros., Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
Mangrum & Otter, 827 Mission St., San Francisco.
Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
Home Manufacturing Company, 543 Brannan St., San Francisco.
C. F. Weber & Co., 985 Market St., San Francisco.
Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
Power & Pike Co., 22-24 Main St., San Francisco.

GARAGE HARDWARE
The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS
Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco: 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

HEATING AND VENTILATING (Continued)
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralph-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

KITCHEN CABINETS
Hoosier Kitchen Cabinets, O. K. Brown, Mgr., Pacific Bldg., San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.

LATHING MATERIAL
Pacific Building Materials Co., 525 Market St., San Francisco.
Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
California Redwood Association, 216 Pine St., San Francisco.
Dudfield Lumber Co., Palo Alto, Cal.
Hooper Lumber Co., Seventeenth and Illinois Sts., San Francisco.
Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
Pope & Talbot, foot of Third St., San Francisco.
Portland Lumber Co., 16 California St., San Francisco.
Sunset Lumber Company, First and Oak Sts., San Francisco.
Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
Mangrum & Otter, 827-831 Mission St., San Francisco.

MARBLE
American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
Dudfield Lumber Co., Palo Alto, Cal.
Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
National Mill and Lumber Co., San Francisco and Oakland.
The Fink & Schindler Co., 218 13th St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

PAINTING, TINTING, ETC.
- I. R. Kissel, 1747 Sacramento St., San Francisco.
- D. Zelinsky & Sons, San Francisco and Los Angeles.
- The Tormey Co., 681 Geary St., San Francisco.
- Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
- Magner Bros., 414-424 Ninth St., San Francisco.
- Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
- The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
- The Glidden Company of California, 123 Hooper St., San Francisco.

PAINTS, OILS, ETC.—Continued
- R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
- W. P. Fuller & Co., all principal Coast cities.
- "Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
- White Bros., Fifth and Brannan Sts., San Francisco.

PAVING BRICK
- California Brick Company, Niles, Cal.

PIPE—STEEL AND WROUGHT IRON
- Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
- Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
- The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
- U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
- A. Knowles, Call-Post Bldg., San Francisco.
- MacGruer & Simpson, 180 Jessie St., San Francisco.
- James F. Smith, 273 Minna St., San Francisco.

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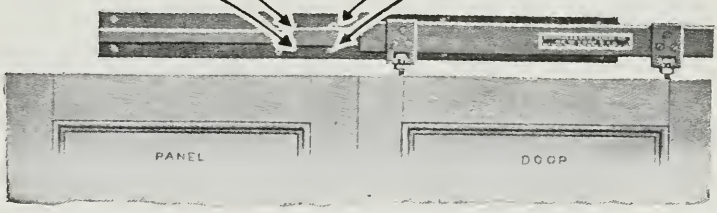

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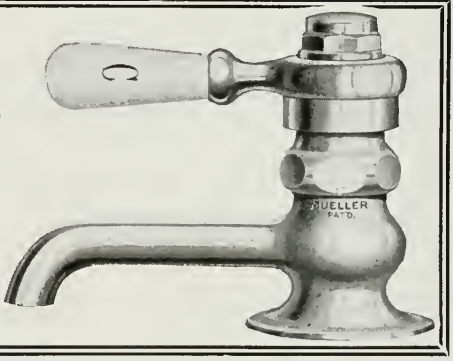

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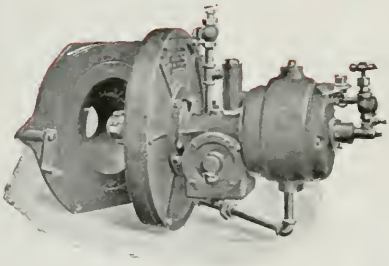

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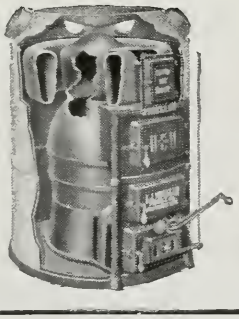

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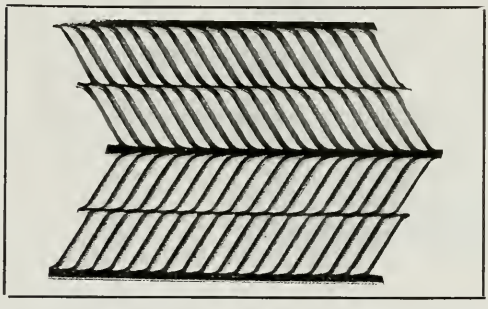

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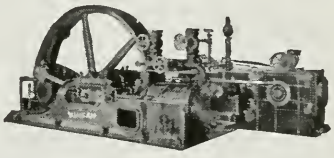

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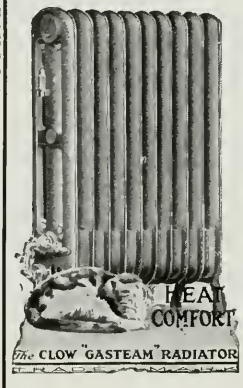

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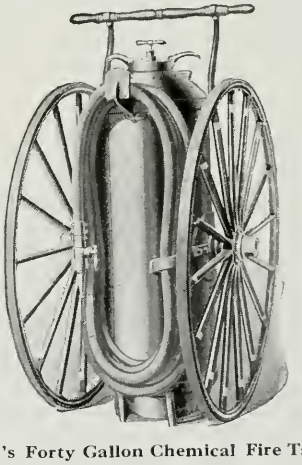

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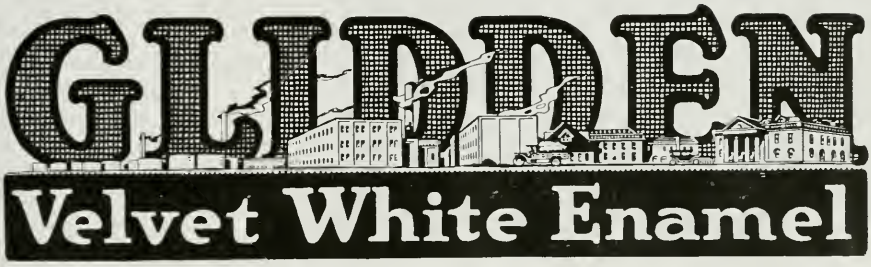

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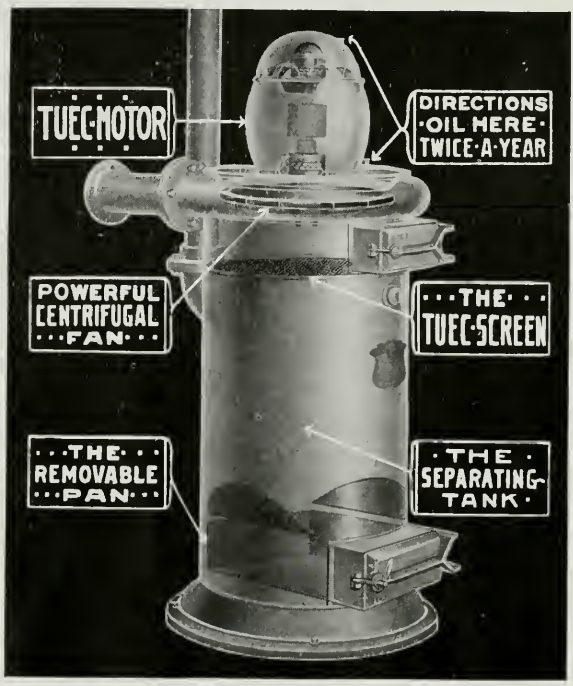

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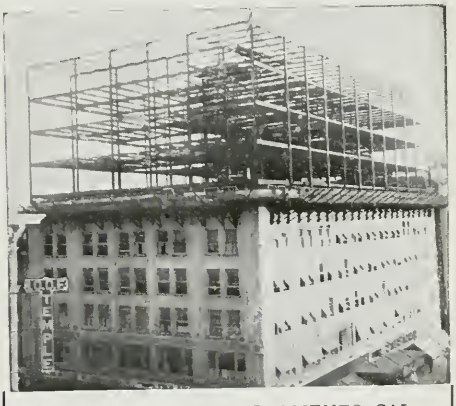

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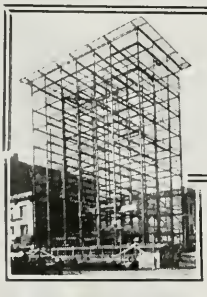

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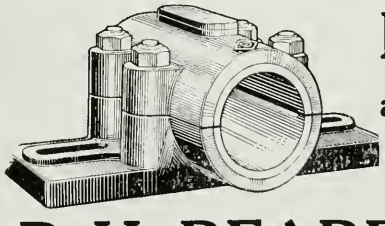

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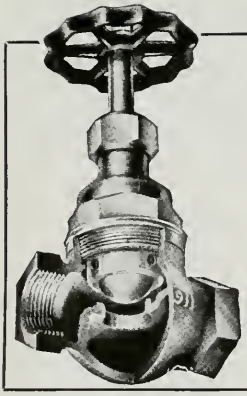

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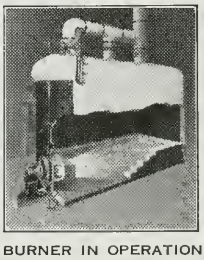

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THE ARCHITECT AND ENGINEER

Volume LVIII. INCORPORATED Number 3

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HOTEL APARTMENTS, UNION SQUARE, SAN FRANCISCO
PHOTO FROM SKETCH BY J. F. DUNN, ARCHITECT

THE
ARCHITECT
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SEPTEMBER, 1919 Vol. LVIII. No. 3

Apartment Houses

By J. F. DUNN, Architect

APARTMENT houses in large cities were the result of high-priced land. Today, because of manifold economic conditions, too involved to mention in this short article, all people, both rich and poor, are banding together, pooling their interests, to reduce costs and improve living conditions. The individual house is gone. Never before, in the history of our older cities, have so large a number of residences borne signs marked "To Let," or "For Sale." This condition must be apparent to the most casual observer. One may see in San Francisco, in the heart of the down-town fashionable district three of the most complete and artistic homes, standing vacant for more than a year, for want of buyers, willing to struggle with the care and expense an individual house would entail. This community spirit, or getting together under one "overhead," avoiding duplication of effort, is the rational way of doing things, whether in governmental affairs, selling oil, transportation or housing. Apartments mean nothing more than economic housing—a collection of houses or homes. They may be spread out horizontally, as in "Suburban" or "Garden apartments" of three or four stories, with grassy lawns, play grounds, kindergartens and nurseries; or they may be built vertically of seven, twelve or twenty stories, with units of two or four rooms, to apartments with twenty rooms, duplex or triplex. They may not only contain all the familiar beauties we have associated with the most luxurious homes, but novelties undreamed of in homes, such as the salt-water swimming tank in "The Inverness," at Bush street and Van Ness avenue, San Francisco.

The majority of tenants occupying large apartments come from homes and also have country houses—hence the necessity of giving them all the luxuries they have been accustomed to, plus the economies and conveniences resulting from community or apartment house living.

APARTMENT HOUSE, 405 PARK AVE., NEW YORK CITY
(Given Gold Medal by A. I. A. Chapter for Tall Apartment Buildings)
CROSS & CROSS, ARCHITECTS

The scheme of planning for large apartments, after the selection of a proper site, always divides the problem into three major elements, public, private and service, or the entertaining department, so to speak, the family domicile and the service quarters. The public part, facing the streets or the best outlook, is always en-suite and all openings regularly spaced and on axial lines. If openings are off centers and no study given to symmetry and proportion of wall spaces, no amount of added decoration can ever remedy this fundamental error. These extra large apartments are usually decorated in the Italian style, with high ceilings, a setting or background admirably suitable for the display of tapestries and large, massive furniture. The living or entertaining portion of these apartments have rooms often thirty feet in length with twenty-foot ceilings, which enables the plan to be duplex, taking advantage of the extra height to work in this high one-story; the low service and bed-room floors, as is shown in the New York illustrations.

The smaller apartments of five, six or eight rooms are usually on one floor, with ceilings about ten feet. These apartments are paneled in a modified Louis XVI style, Georgian or Adam period, and painted in a light color-scheme which serves as an effective background for any period furniture.

Bedrooms and baths should have a sunny exposure. While the tiled bath rooms have the best plumbing, there is a noticeable lack of affectation and unnecessary expense. Tubs are always recessed, toilets are of the flushometer type with white seat and china trimmings, and the lavatories are pedestaled and enameled-ware in place of the enameled iron.

Since the enthronement of the servant, special attention is given to the service quarters. The kitchen is no longer used as a passageway, and a general sitting room is provided for servants. Each bedroom is equipped with a wall bed in a ventilated dressing closet with running water. The bath room is provided with shower over tub and a toilet.

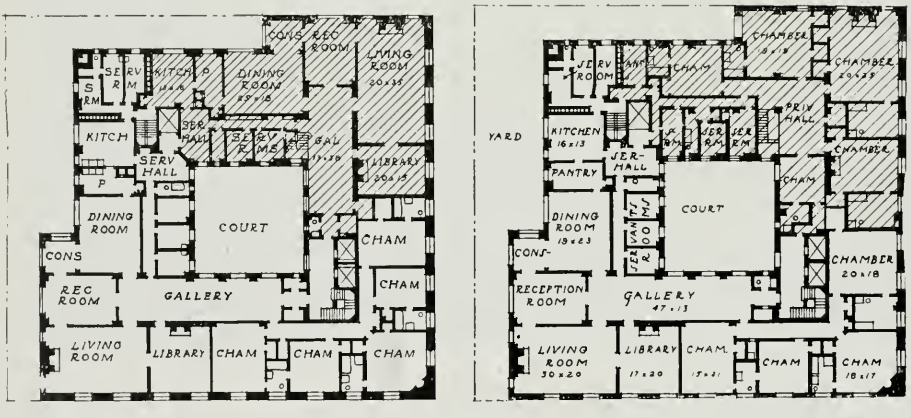
The "Hillard" is a fine example of such an apartment. The building will contain fifteen apartments, covering five floors, and the two lower stories will contain, in addition to a Caen stone and marble lobby, servants' quarters, laundry, garages and other necessary adjuncts of such a structure. The apartments will contain six rooms and two baths and seven rooms and three baths respectively, and the rents will range from $250 to $350 a month. This is about one-third of what is paid in New York and other large Eastern cities for apartments of this class, and is a very distinct economy when compared to the cost of maintenance of homes of similar character.

The building will be class A and fireproof, the frame being of steel, the exterior of brick and the floors of concrete. Mr. C. J. Hillard, after a close study of modern apartment house projects in New York, became convinced the time was opportune for similar projects here.

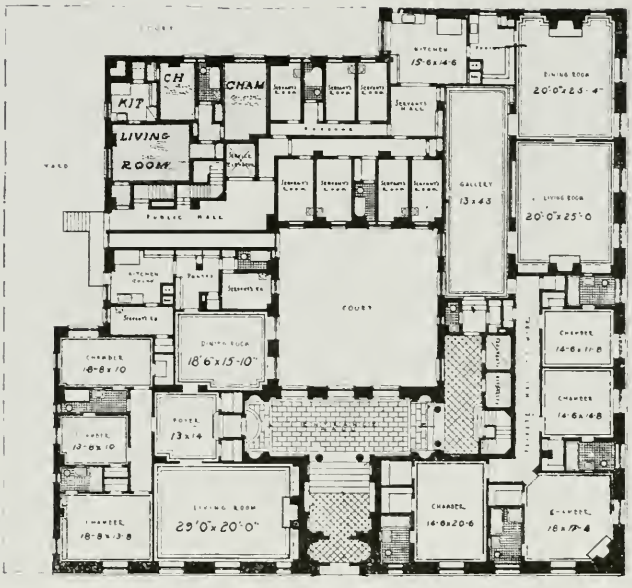
Preliminary estimates showed Mr. Hillard the type of building which he had in mind would require an investment of about $350,000. The financing of the project was readily accomplished by means of a bond issue taken over by one of the national bonding houses, all of whom were found not only ready but eager to invest in projects of this character

All of the apartments will have a sweeping view of the Golden Gate, the bay and the Marin hills. The location is ideal for apartments of this class, combining as it does a wonderful view point, easy accessibility to the business sections of the city and refined and exclusive residential surroundings.

APARTMENT BUILDING, FIFTH AVE., NEW YORK CITY. . Awarded Gold Medal by New York Chapter, A. I. A., for multiple dwellings over six stories high. J. E. R. Carpenter, Architect.

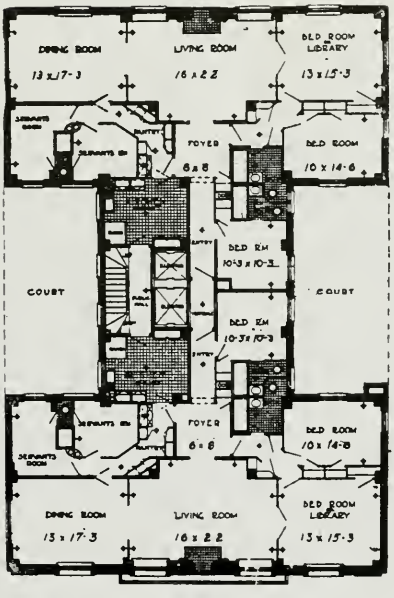


SIXTH, EIGHTH AND TENTH FLOOR PLANS, SHOWING DUPLEX TYPE APARTMENT BUILDING, 907 FIFTH AVE., NEW YORK CITY
J. E. R. Carpenter, Architect



First Floor Plan

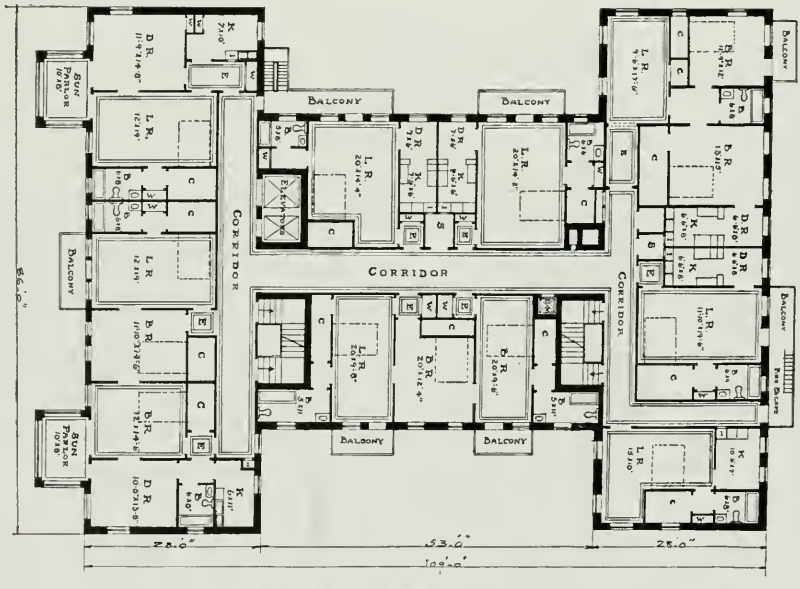
APARTMENT BUILDING, 907 FIFTH AVENUE, NEW YORK
J. E. R. Carpenter, Architect


DINING ROOM 13 x 17-3
LIVING ROOM 16 x 22
BED ROOM LIBRARY 13 x 15-3
FOYER 6 x 8
BED ROOM 10 x 14-6
COURT
BED RM 10-3 x 10-3
BED RM 10-3 x 10-3
COURT
FOYER 6 x 8
BED ROOM 10 x 14-8
DINING ROOM 13 x 17-3
LIVING ROOM 16 x 22
BED ROOM LIBRARY 13 x 15-3

TYPICAL FLOOR PLAN
116 EAST FIFTY-EIGHTH ST., NEW YORK CITY
J. E. R. Carpenter, Architect

This plan has been carried out in the Montelanno Apartments, San Francisco, designed by Mr. J. F. Dunn, and shown on page 76 of this issue.

CLIFTON APARTMENTS, NASHVILLE, TENN.
Marr & Holman, Architects



TYPICAL FLOOR PLAN, CLIFTON APARTMENTS, NASHVILLE, TENN.
All Two and Three-Room Apartments.

APARTMENTS RUE GUSTAVE FLAUBERT, PARIS
M. Lefebre, Architect

APARTMENT HOUSE, PARIS, FRANCE
M. Lefebre, Architect

The plans disclose commodious rooms and extremely attractive appointments. French doors, opening on artistic wrought iron balconies that Mr. Hillard is noted for, large fireplaces, cedar closets, baths and showers, high tiled wainscoting in baths and kitchens, give an idea of the character of the interior design; and provision for the latest type of electric elevator, dumbwaiters for each apartment, steam-heating plant, vacuum-cleaning system, refrigerators, laundry with electric washing machines and other modern devices.

The first essential before the planning of this, or in fact any kind of an apartment, is the selection of a site, one of special fitness not only to its planning possibilities, surroundings, and greatest possible permanency, but one suitable for the type of tenants likely to be attracted. Marine views, revealing the beauties through our wonderful scenic ocean mists, our bay and mountain background, are the much-sought-for locations. In all large cities, localities undergo continual changes, and the "residence avenue" of today may be the "automobile row" of tomorrow. This mutability and consequent obsolescence of real estate had its effect exemplified in no more striking manner than in the case of the apartment house at Bush and Van Ness avenue, one of the earliest high-class apartment houses, illustrated in this article. This building is a seven-story, reinforced concrete, monolithic building, built on a lot 60x100 feet, and now bringing an annual rental of $19,200.00. It was sold a few months ago for $250,000. Had an architect been consulted regarding the site, it would have been built in a different neighborhood, on a less costly lot, and would rent for $60,000 a year and sell for $500,000. The truth of the matter is that the successful owner is he who employs an architect from the selection of the site to the final touches on the finished building. This is so apparent to architects that several, seeing the fortunes being made through their efforts, have lately entered the building field with great commercial success. A mere set of blue prints in the hands of a lay-man or a contractor, has as much value to them as the architect's drawing instruments or a portion of his library. All good building is an evolutionary process, and calls for constant changes and modifications as the work progresses. This growth is very aptly explained by Mr. Elihu Root in an article published in the Architectural Record, November, 1913, concerning the Pan-American building, acknowledged as the best example of architecture in Washington, D. C.

"The architect brings all things into order, making one part to harmonize and accord with another, until he constructs a regular and systematic whole."*

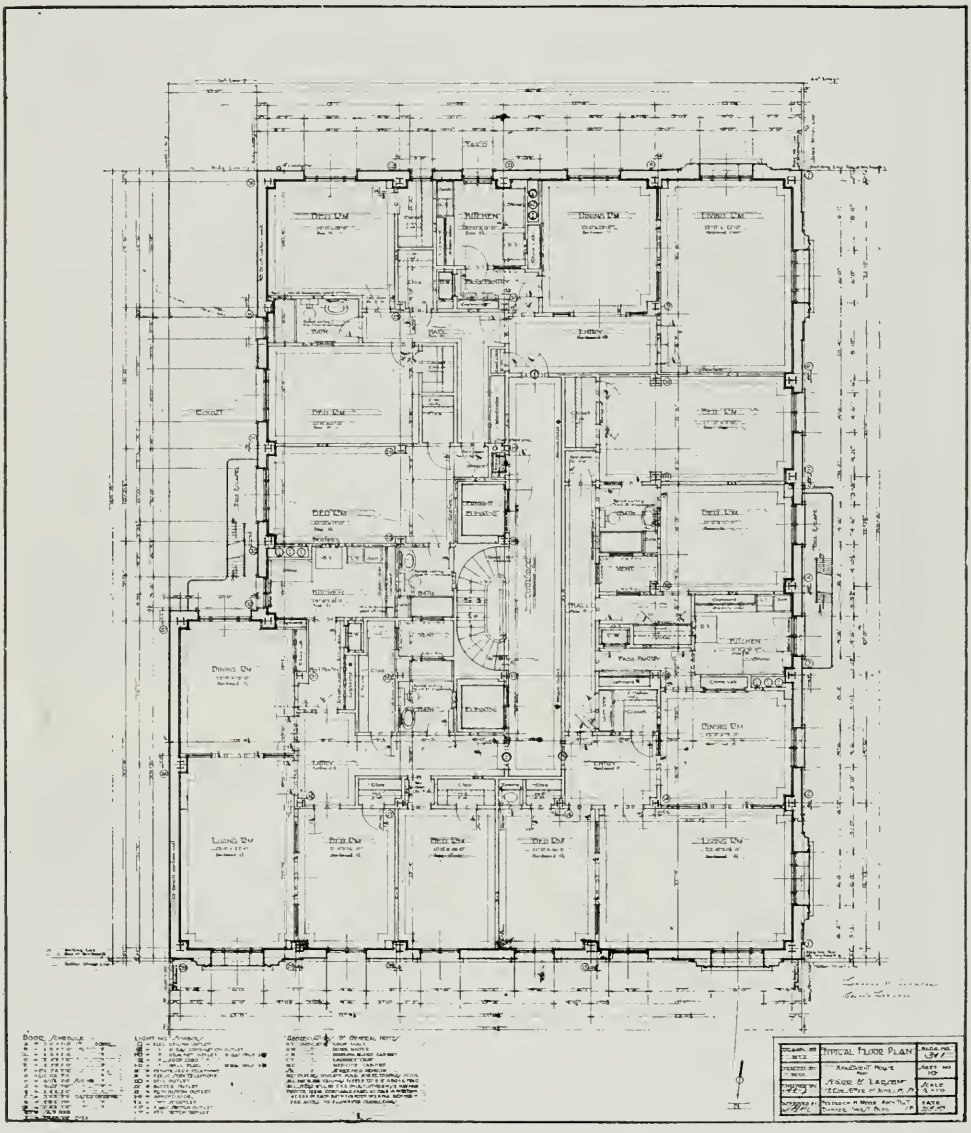
Building, as an art or craftsmanship, is absolutely dead, as Mr. Thomas Hastings fittingly remarked some years ago in answer to Mr. R. W. Cram on the impossibility of reviving medieval art. Workmen today are only concerned in increasing their wages, lessening their hours of labor, and snow-balling** with the fallacious idea of restricting production to provide more opportunities for work, at the behest of walking delegates and their business agents. Any merit seen today in a building, gets there by explicit working-drawings and the personal effort of the architect. Looking at it from a purely practical standpoint, one must see the advantage of keeping nine- and ten-dollar-a-day workmen moving, under the direction of a working builder and architect, with definite working-drawings. I

*Plato's definition of an artist.

** Snow-balling is the calling of a strike by one union until higher wages are obtained, with the other unions taking turns in succession until a higher wage level is reached by all.

APARTMENT HOUSE FOR MR. C. J. HILLARD, SAN FRANCISCO
Alfred Henry Jacobs, Architect.

APARTMENT HOUSE FOR THE CONSOLIDATED SECURITIES CO., LOS ANGELES, CAL.
Scott Quintin, Architect



TYPICAL PLAN—BELGRAVIA APARTMENTS, SAN FRANCISCO
FREDERICK H. MEYER, ARCHITECT

BELGRAVIA APARTMENTS, SAN FRANCISCO
FREDERICK H. MEYER, ARCHITECT

INVERNESS APARTMENT HOUSE, SAN FRANCISCO
J. F. DUNN, ARCHITECT

APARTMENTS FOR MR. GEO. CAESAR, SAN FRANCISCO
F. F. DUNN, ARCHITECT

know of a case where an owner saved 57% on mill work, by listing his own stuff, instead of taking a full mill-bid in the usual manner. Architects get 50% more efficiency from labor and materials by using new methods of design, both aesthetically and constructively. The aesthetic was explained in the May article of The Architect and Engineer on Apartment House Design. Reinforced concrete is the coming economical material for building, and especially so on this coast, because of the distance from steel supplies and the greater security it gives from earthquakes. With concrete costing 30 cents per cubic foot, for example, and steel 4 cents per pound, or about $20 per cubic foot, and with working stresses of 400 and 15,000 pounds, respectively, the relative cost of the two materials is as 30 is to 2000, or as 45 is to 80, hence the extravagance of using

$$\frac{30}{400} \quad \frac{2000}{5000}$$

steel when concrete will serve.

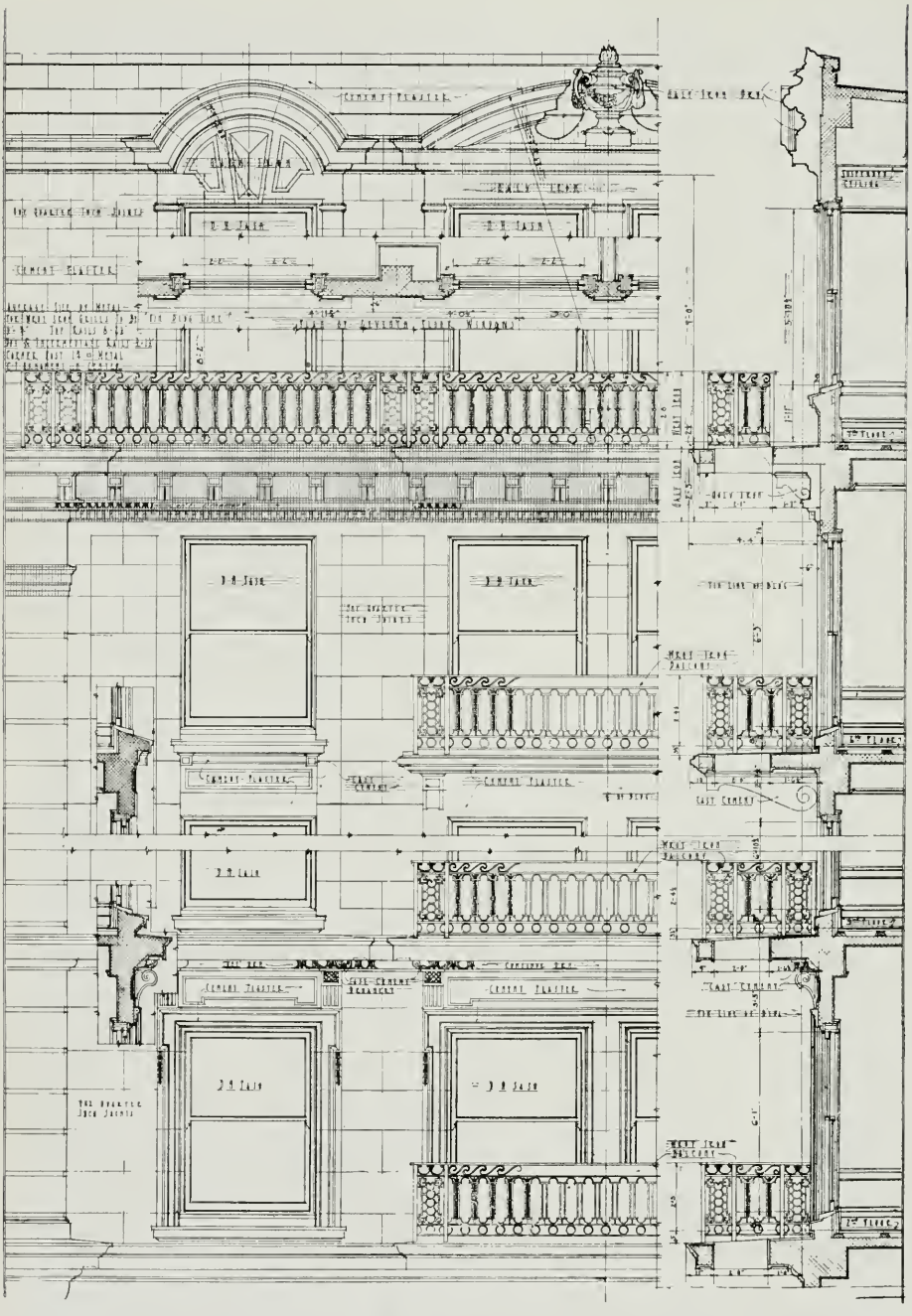
Another extravagance is the present contracting system. The difference between a working builder and a contractor or contracting company is not appreciated by owners. The builder is a mechanic who learned some building trade, preferably carpentry, and constructs or puts together with his organization the materials, under the direction of the architect. While a contractor signs up a general contract and then parcels out the work of construction among various sub-contractors who actually perform the labor. Meanwhile, having figured in his bid a sufficient margin to repay him for any risk or responsibility he may have undertaken, collects the money from the owner and pays some of his receipts out to the real builders. Having only a limited knowledge of building, he becomes a constant source of trouble and irritation to the architect. A builder should be employed for his knowledge of executing work. The best results are obtained when the sub-contractors are handled by the architect. Under the present system there are too many middlemen, too much duplication of effort, too many unnecessary movements. The registering of bids of plumbers, mill men, plasterers, roofers, etc., with their respective associations, makes in their totality quite an item, which is added to the cost of the building. I have digressed considerably on the question of Apartment House Costs, because it is the main and usually the only idea of owners and the chief concern of the people. Under the present conditions, when one dollar only buys 40 cents worth of building, it is difficult to understand the process of reasoning that would influence an owner to copy or construct buildings of an old or existing type. One of the newer types of apartment buildings is the Apartment Hotel, best described by saying that it combines the advantages of a hotel and a high-grade apartment building, eliminating the bad features of each. They appeal particularly to people who have country homes and wish to maintain a city apartment for use at various times during the year. Maid service is usually included in the rent, kitchenettes are in each apartment, but no dining-room. Breakfast is served in the apartment, but dinners are obtained either in the restaurant or sent to the apartment. This type of house removes housekeeping cares, solves the servant problem, which has been a vexatious one for sometime, and is likely to become more acute with restricted immigration, and the higher scale of wages in other lines of activity. The wall bed has been brought into excellent use here. This type of apartments is paying a greater return than any other form of investment. The latest tendency in apartment house designing is dignified simplicity, with genuine materials in contrast to the excessive ornateness, often of tin and

FRANDSEN APARTMENTS, RENO, NEVADA
F. J. Delongchamps, Architect

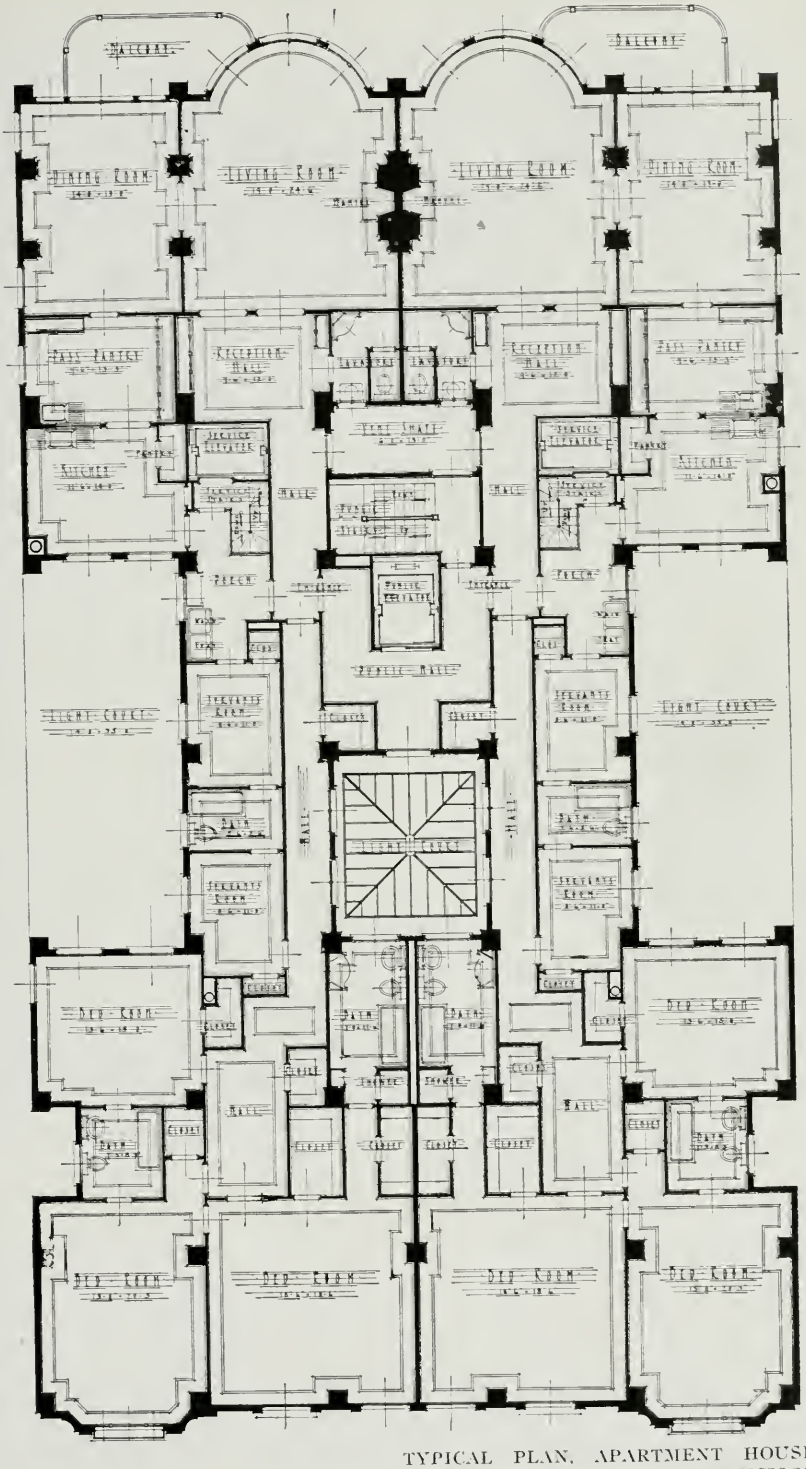
APARTMENT HOUSE FOR MESSRS. WOOD & PEYSER, SAN FRANCISCO
C. A. Meussdorffer, Architect

APARTMENT HOUSE FOR
MR. A. W. WILSON, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT

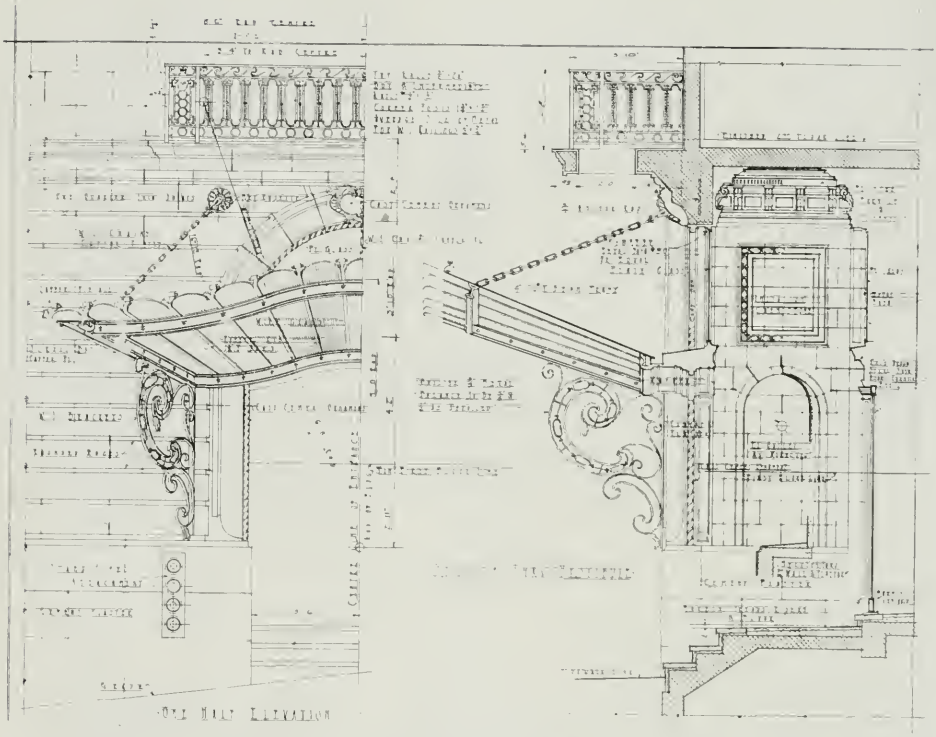
APARTMENT HOUSE FOR
MR. A. W. WILSON, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT



DETAILS, APARTMENT HOUSE FOR
MR. A. W. WILSON, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT



TYPICAL PLAN, APARTMENT HOUSE
FOR MR. A. W. WILSON, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT



DETAILS, APARTMENT HOUSE FOR MR. A. W. WILSON, SAN FRANCISCO
C. A. Meussdorffer, Architect

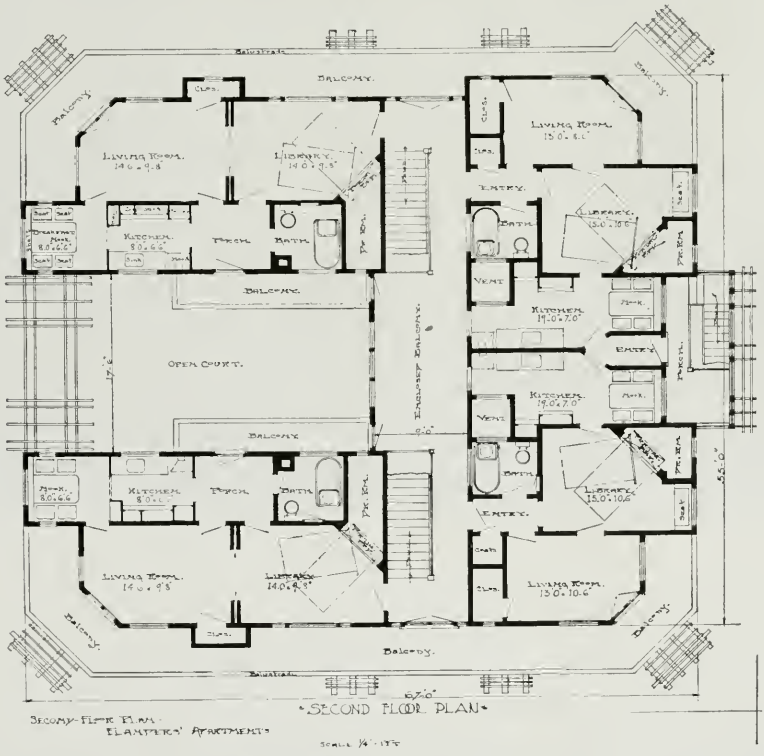
plaster, once thought so indispensable to attract the mediocre taste of the average apartment house dweller. Such are many of the pictures of apartments throughout the country, shown in this number, and which are a modified reflex of the owners' ideas, and may be explained with the remark Solon gave, when asked by the Athenians, if the laws he gave them were the best. "No," replied Solon, "but the best they would receive."

Perhaps the most interesting type of apartments, to the majority of people, is the two and three room apartment, which had its origin and reached its highest development on the Pacific Coast. The general plan or ensemble must present a scheme in the form of the letter U, H or V, so that all apartments face the street or street-court. The V shaped arrangement is shown in the Chicago apartment house, while the Ross-Early Apartments at Post and Leavenworth streets, San Francisco, may serve as an example of the H-shape. This building contains about forty apartments of two and three rooms each. Each apartment consists of a foyer or entrance hall, from which is the living-room, kitchen, bath, clothes closet and dressing room. The living-room should be about 13x20 ft. and contain not less than 250 square feet with a bay-window or group of openings in the center of the wall. Plastered walls are simply paneled with wood mouldings and painted in warm neutral tones, the most effective background for the stock furniture and hangings. The dressing-room must contain not more than 25 square feet exclusive of a wall-bed and dresser. The law governing this was enacted to prevent using this space for an emergency sleeping room. The door of this closet "contrived a double debt to pay;

SUTTER STREET APARTMENTS, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT

ENTRANCE, SUTTER STREET APARTMENTS, SAN FRANCISCO
C. A. MEUSSDORFFER, ARCHITECT

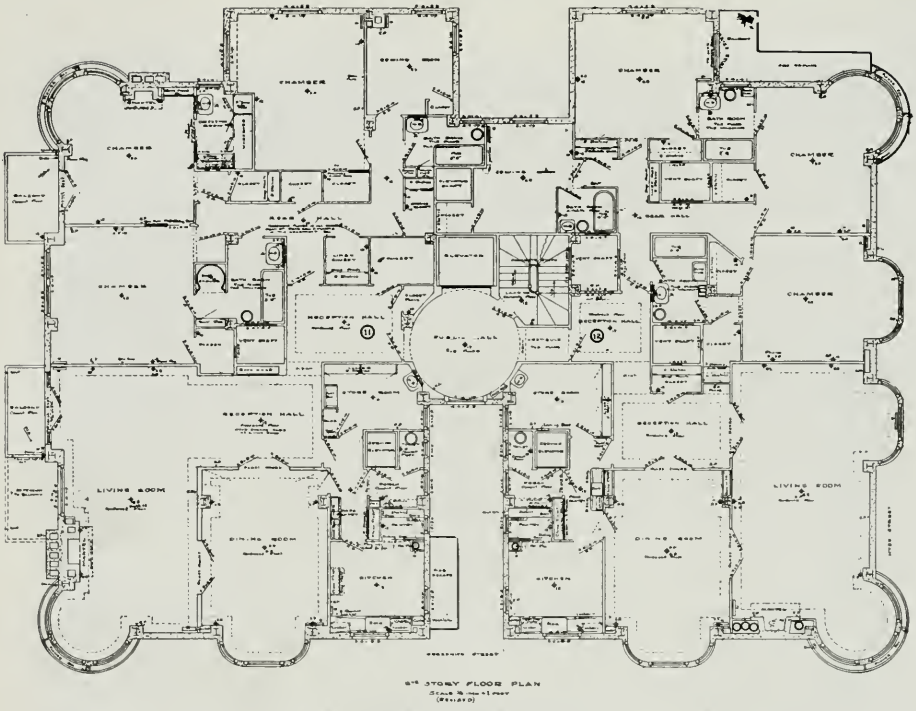
FLANDERS APARTMENTS, HOLLYWOOD
J. E. Flanders, Architect



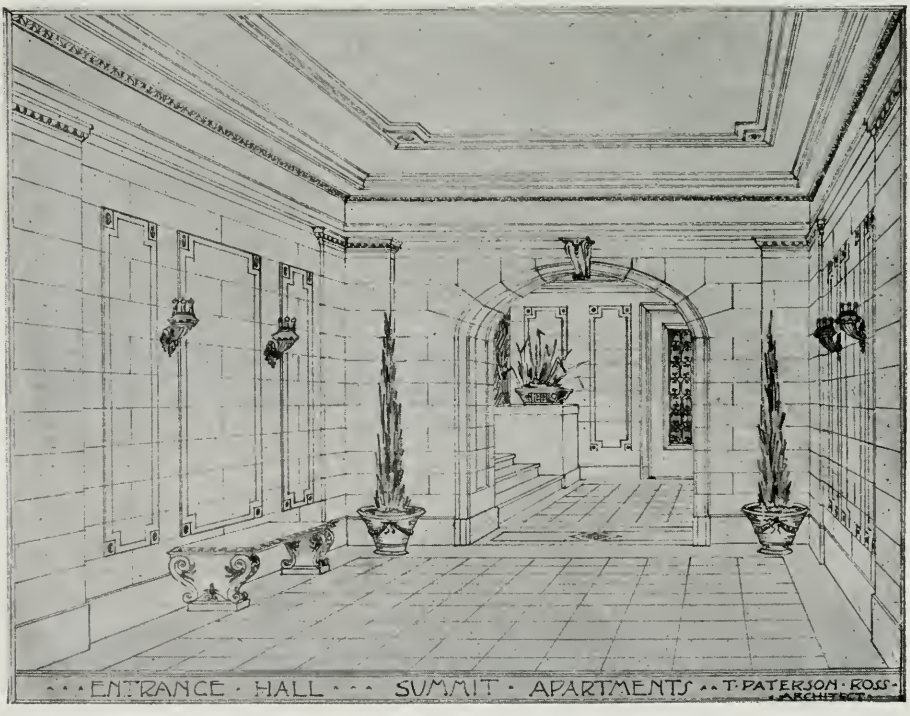
PLAN, FLANDERS APARTMENTS
J. E. Flanders, Architect

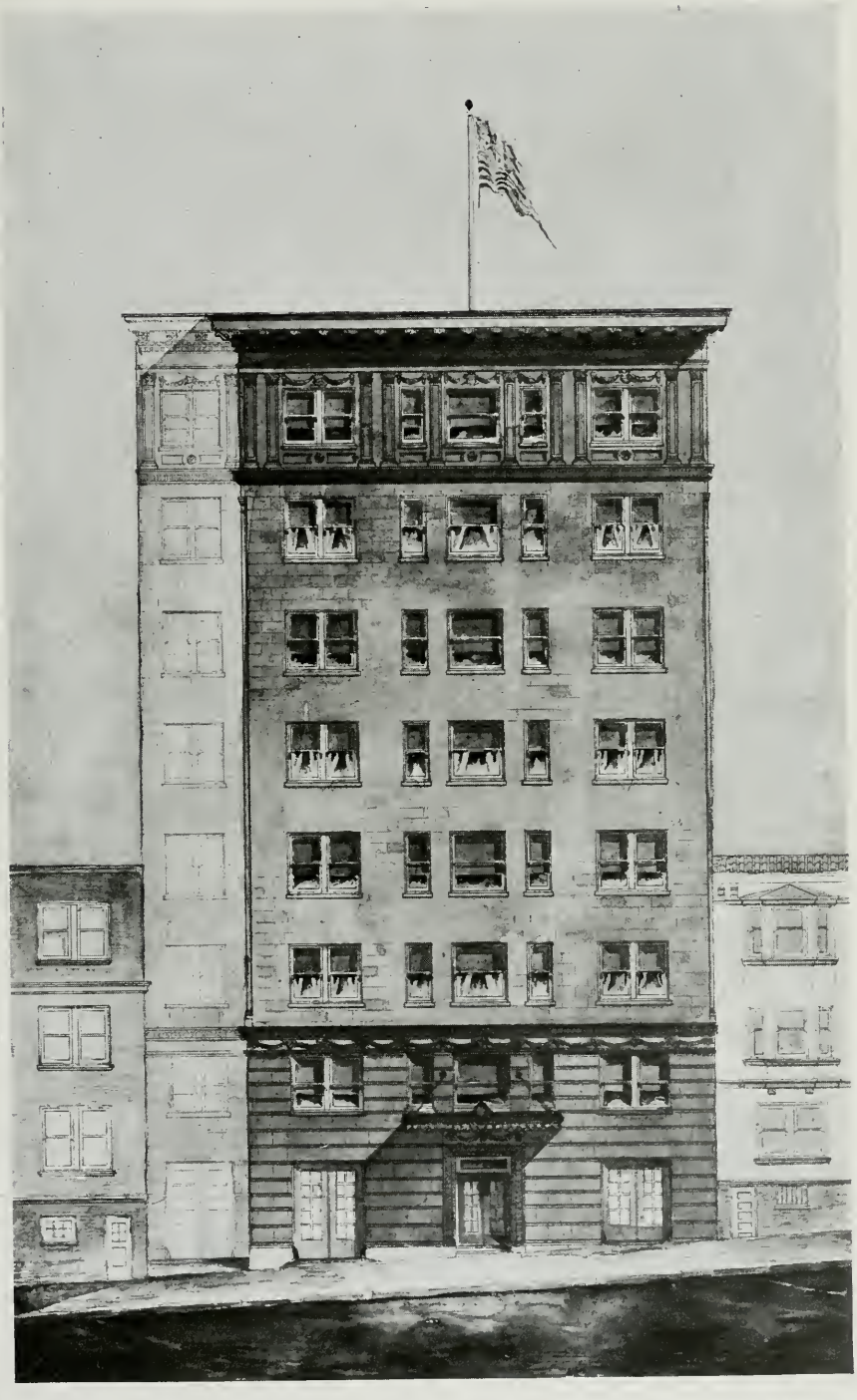
SUMMIT APARTMENTS, SAN FRANCISCO
T. PATERSON ROSS, ARCHITECT

ENTRANCE, SUMMIT APARTMENTS, SAN FRANCISCO
T. PATERSON ROSS, ARCHITECT



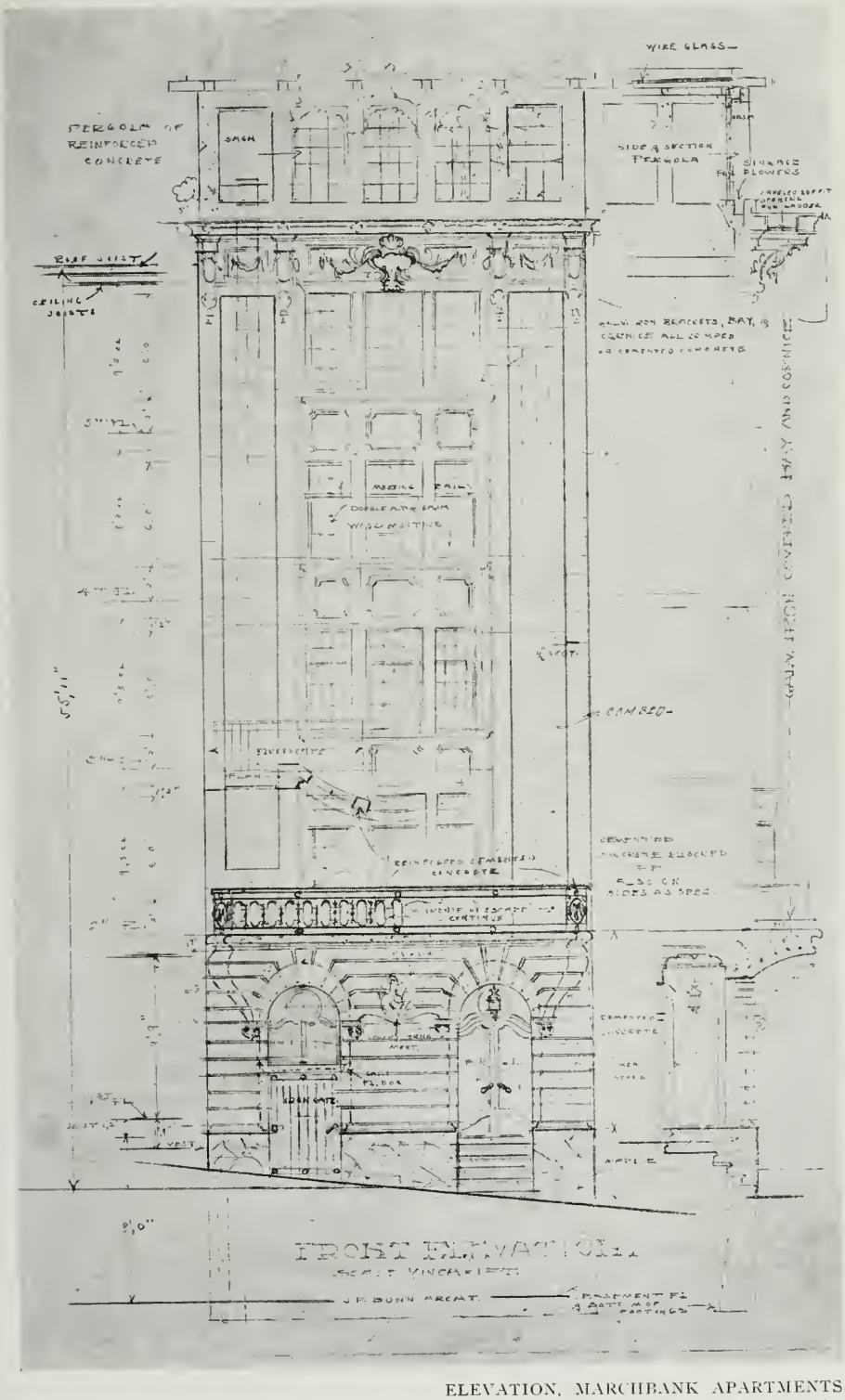
TYPICAL FLOOR PLAN, SUMMIT APARTMENTS, SAN FRANCISCO
T. Paterson Ross, Architect



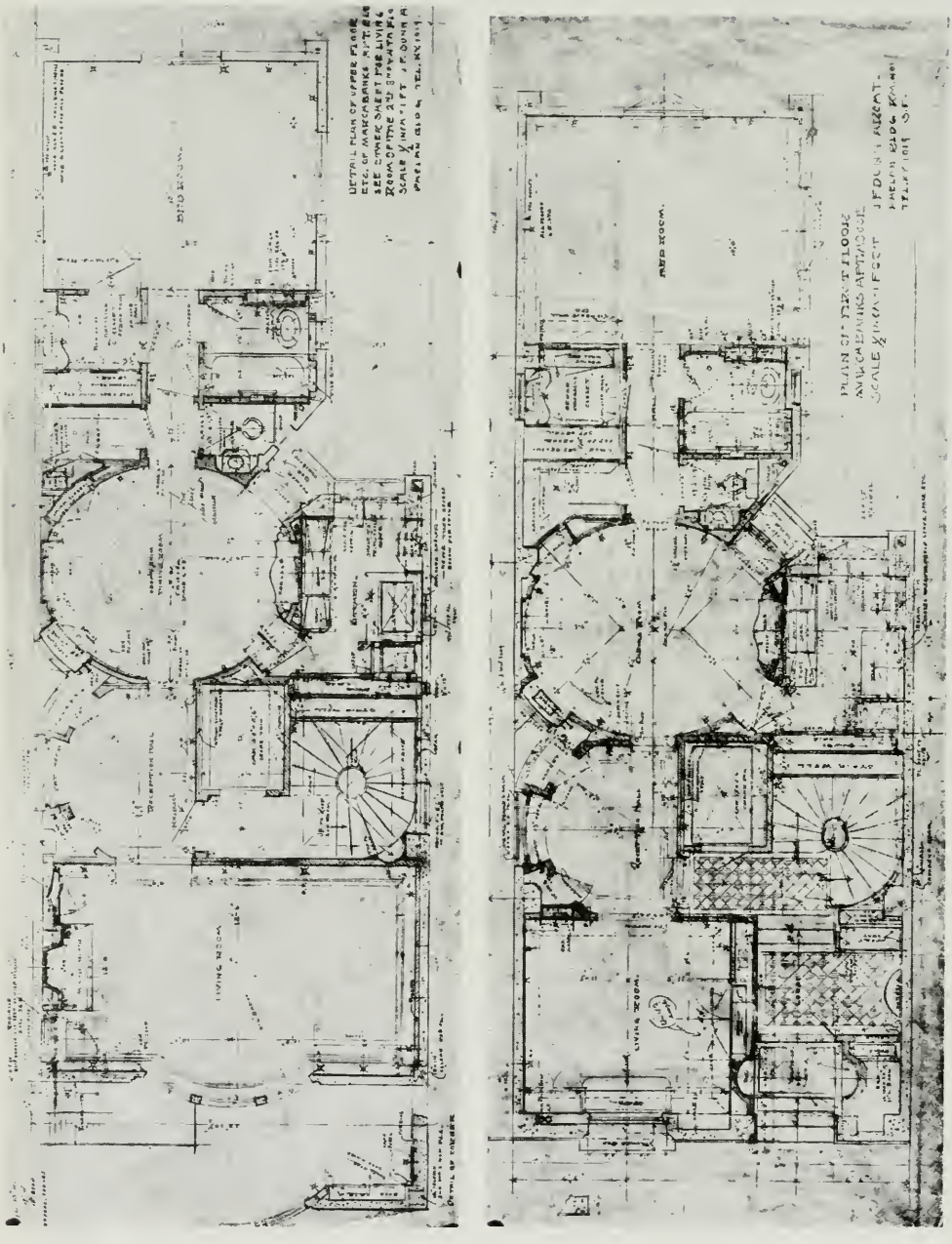


DESIGN FOR PROPOSED COMMUNITY APARTMENTS, SAN FRANCISCO
T. PATERSON ROSS, ARCHITECT

MARCHBANK APARTMENTS, SAN FRANCISCO
J. F. DUNN, ARCHITECT



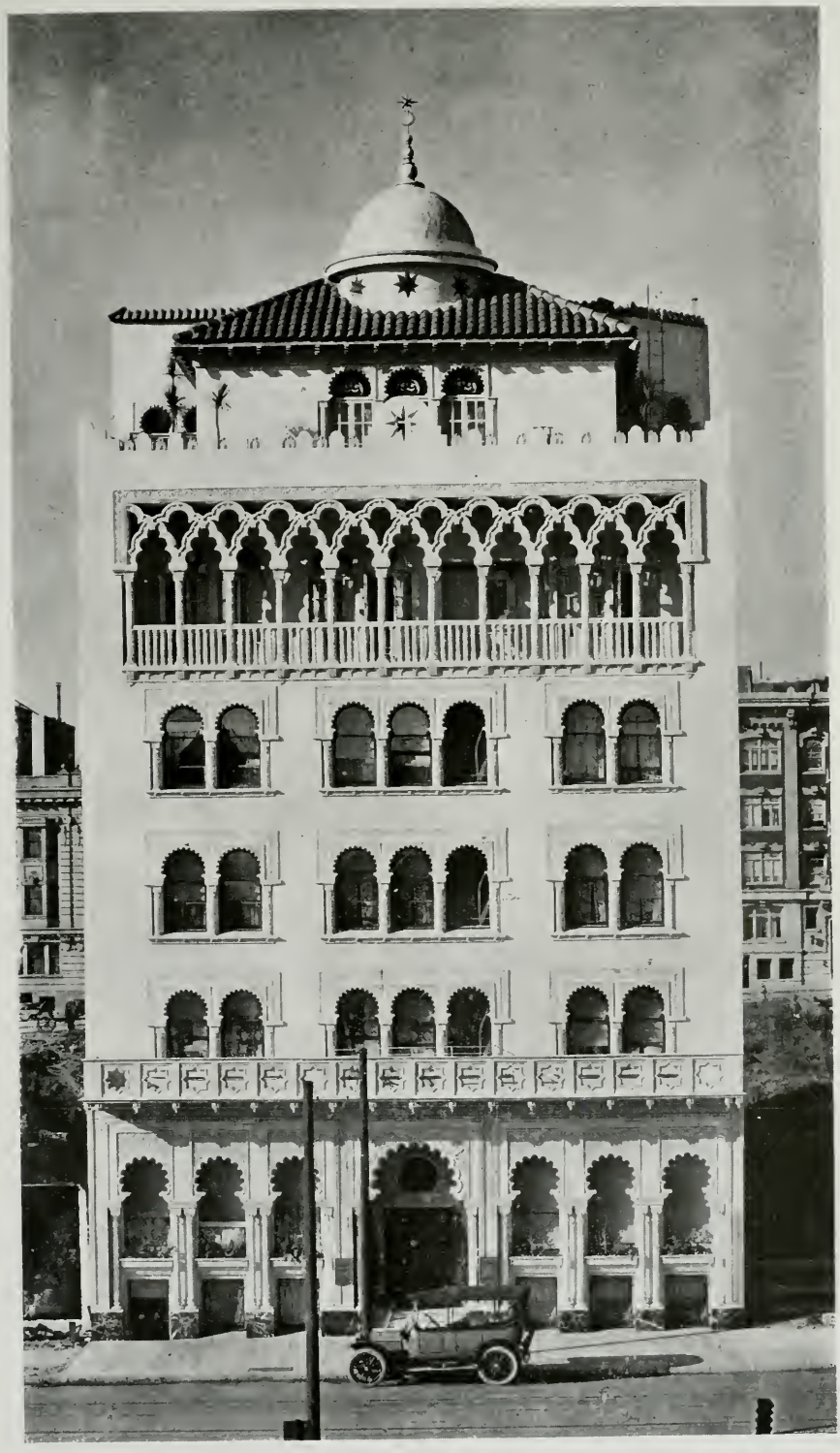
ELEVATION, MARCHBANK APARTMENTS
J. F. DUNN, ARCHITECT



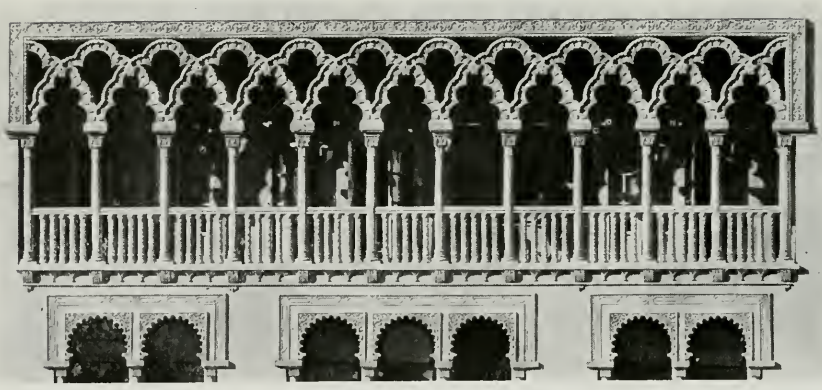
PLANS, MARCHBANK APARTMENTS—J. F. DUNN, ARCHITECT

DINING ROOM, MARCHBANK APARTMENTS
J. F. DUNN, ARCHITECT

INTERIORS, MARCHBANK APARTMENTS
J. F. DUNN, ARCHITECT



ALHAMBRA APARTMENTS, SAN FRANCISCO
J. F. DUNN, ARCHITECT

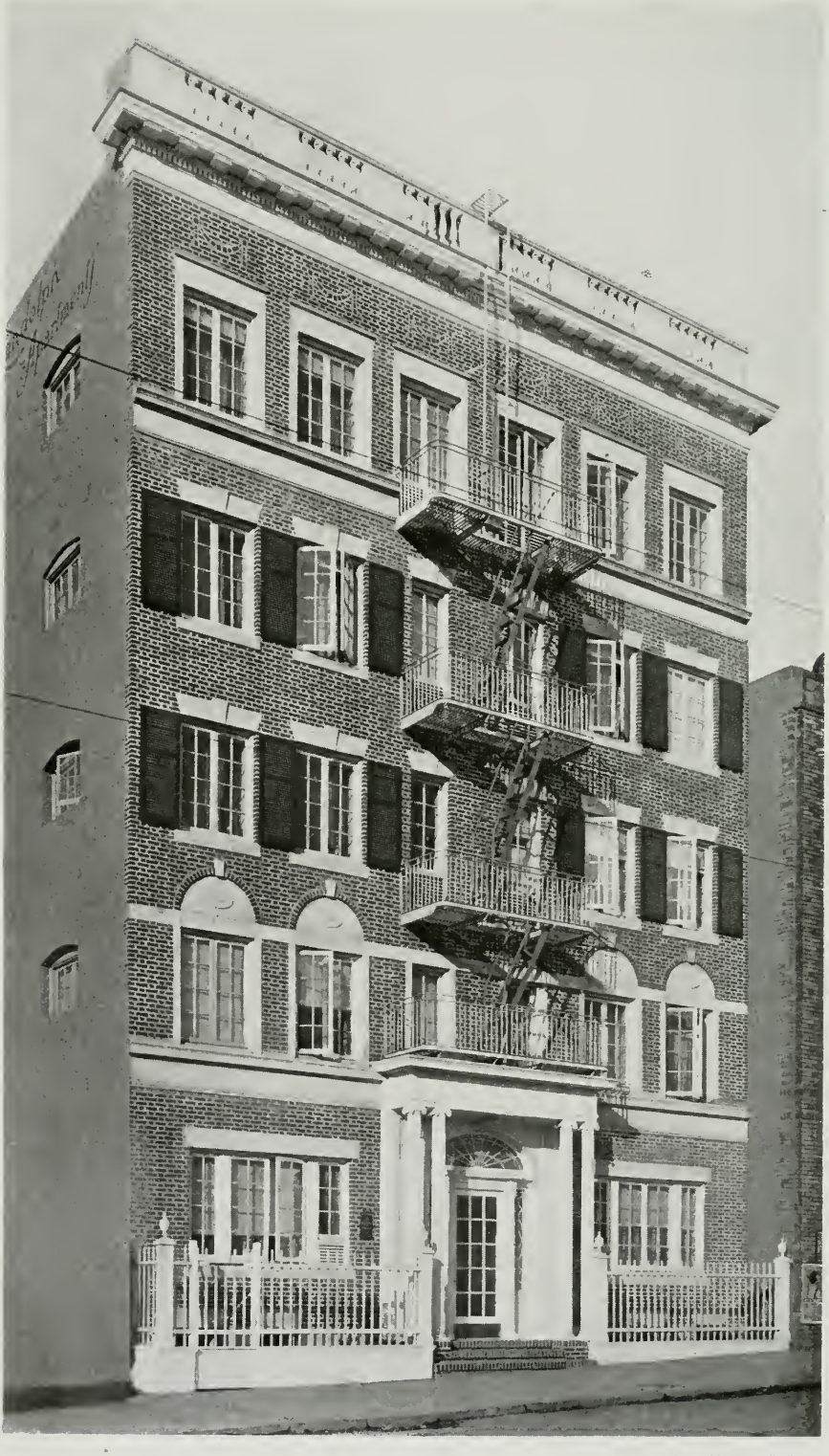


LOGGIA, ALHAMBRA APARTMENTS, SAN FRANCISCO

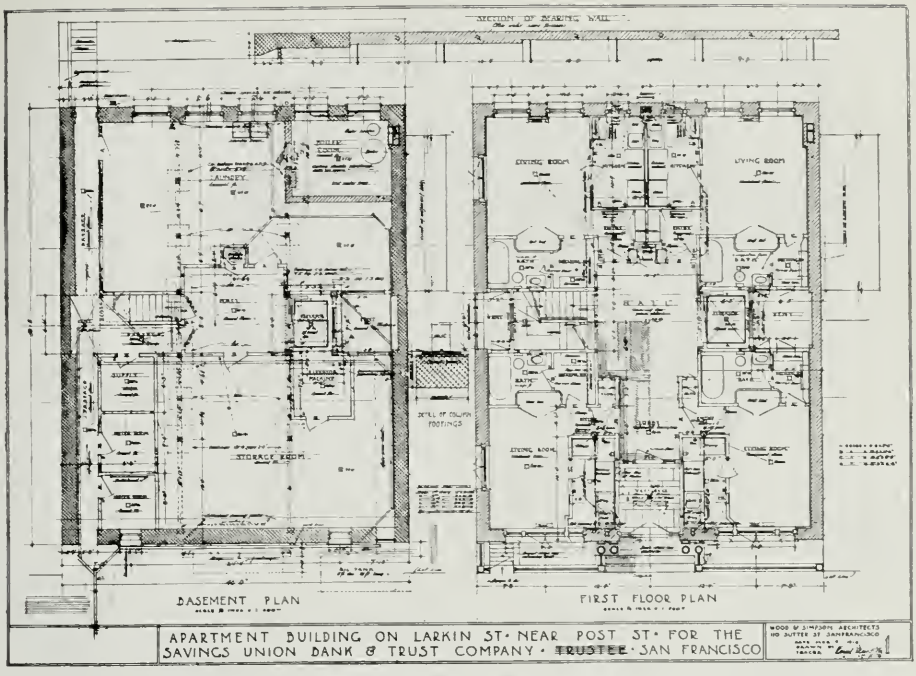
MONTELANNO APARTMENTS, SAN FRANCISCO J. F. Dunn, Architect

ENTRANCE FOYER, MONTELANNO APARTMENTS, SAN FRANCISCO
J. F. Dunn, Architect

LIVING ROOM, MONTELANNO APARTMENTS, SAN FRANCISCO
J. F. Dunn, Architect



RANDOLPH APARTMENTS, SAN FRANCISCO
WOOD & SIMPSON, ARCHITECTS


BASEMENT PLAN
FIRST FLOOR PLAN
APARTMENT BUILDING ON LARKIN ST. NEAR POST ST. FOR THE SAVINGS UNION BANK & TRUST COMPANY, TRUSTEE, SAN FRANCISCO

FLOOR PLAN, RANDOLPH APARTMENTS, SAN FRANCISCO
Wood & Simpson, Architects

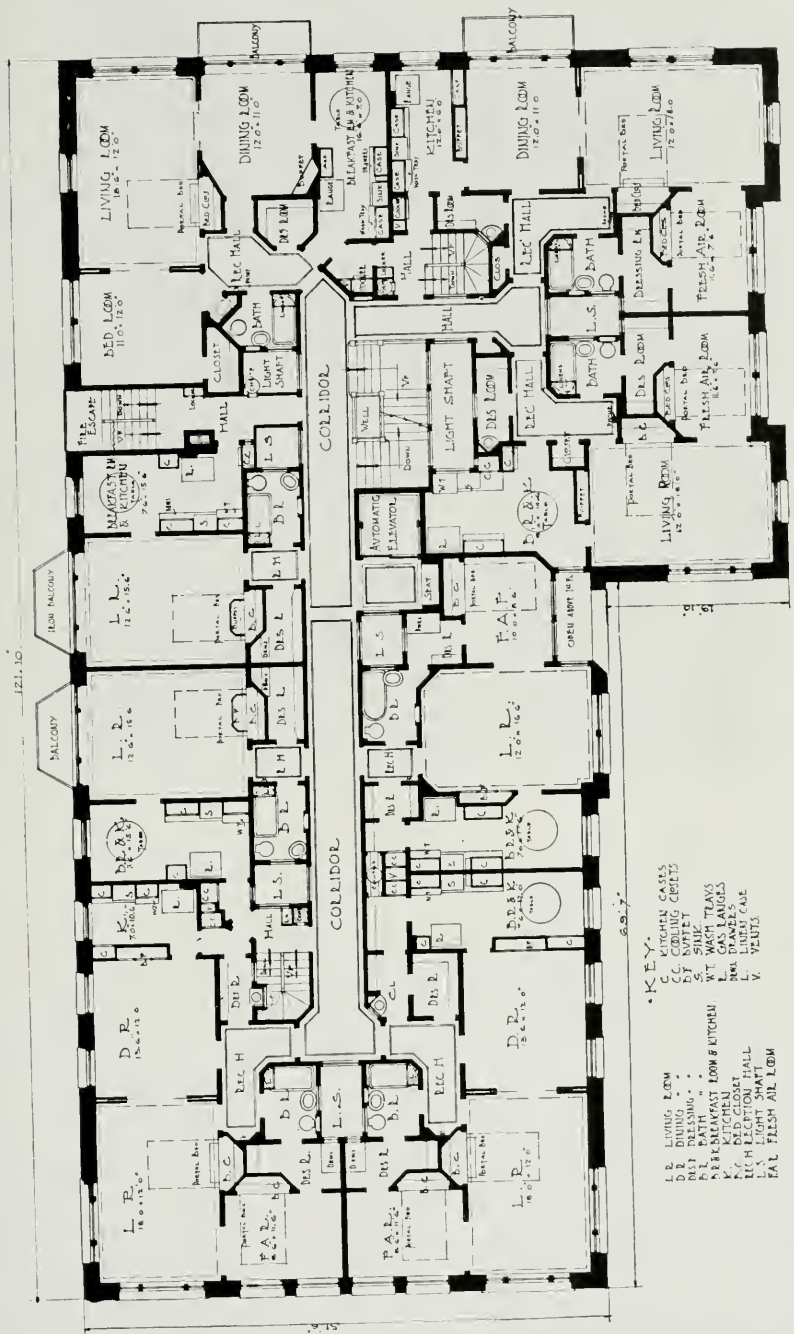
a bed by night, a door by day." Oliver Goldsmith said something like this in 1770, and Americans are still patenting the idea in 1900. How very true Madame Bertens' phrase, when she remarked: "There is nothing new—but old things that have been forgotten". The kitchen part should be about 8x12 ft., containing a hood-vented gas stove, a sink and wash tray. The clothes-drier is in the basement, a case, consisting of three compartments, one for pots, one for china, and the third for a cooler with top and bottom vents, and an ironing-board complete the equipment.— If the kitchen should be longer, say 8x20 ft, the extra space should be divided by a couple of cases, high enough to hide the stove and sink. This space is known as a breakfast-nook. The wall-space should be all casements, opening in, so as not to interfere with flower-boxes, and also serving to confine the window hangings. The lighting throughout is central, with convenient base-plugs. The lighting switch of the living-room is always in reach when the bed is down. The deafening should be a double-plastered ceiling, and if adjoining another apartment, the studs of the walls are staggered and telephones kept off of party walls. The passenger elevator should be of the "Dual" type so an attendant can be placed in it during the theater or rush hours. Electric dumb-waiters and vent pipes should be placed so as to serve two or three apartments. If for economy, in small apartment houses, electric dumb waiters are not installed, or a receiving room in basement, receptacles with opening on public hall should be provided for packages and removing and replacing the garbage cans, or a better arrangement is to provide the tenants with oiled paper bags. All plumbing pipes should be in utility chambers or vent shafts, so as to be accessible in case of repairs. Valves on the steam risers for regulating the distribution of heat is a great economizer, as apartments facing the south do

CRYSTAL PALACE APARTMENTS, OAKLAND
All Two and Three Rooms.
Clay N. Burrell, Architect

not require the same amount of heat as others. The apartment floors are always of hardwood, but the public halls and stairways are carpeted for deafening purposes and should not be less than 3 feet 6 inches, or a multiple of 27 inches. A couple of inches too much will mean a waste of several hundred dollars in carpets on a six-story building. These are a few of the details in this type of apartment which may seem trivial, but if overlooked will prove an unending source of trouble.

I know a young clerk living in a two-room apartment, with an artistic wife, where no attention was given to these details (no architect was employed—it is a "jerry"* building), who is obliged each night to take her hand-painted vases off the pianola, push it toward the front of the room, lift the table and chairs into the bay window and remove some pictures from the wall, in order to let down the wall bed—and some people wonder why apartment house dwellers are childless!

* A jerry building is an apartment house built in the cheapest and flimsiest manner for the sole purpose of selling.—Ed.


•ALICE STREET•
121.10
68.3"
L.R. LIVING ROOM
D.R. DINING "
Dis L. DRESSING "
B.R. BATH
B.R. BREAKFAST ROOM & KITCHEN
K. KITCHEN
B.C. BED CLOSET
D.C. DRESSING CLOSET
H. HALL
L.S. LIGHT SHAFT
F.A.L. FRESH AIR ROOM
•KEY•
K. KITCHEN CASES
C.C. COOLING CHESTS
B.F. BUFFET
S. SINK
W.T. WASH TRAYS
G.R. GAS RANGES
Dis. DRAWERS
L. LINEN CASE
V. VENTS
L. L. 12'6"x15'6"
L. R. 12'6"x16'6"
D. R. 12'6"x11'6"
L. R. 18'0"x13'6"
L. R. 18'0"x12'6"
L. R. 18'0"x16'6"
L. R. 12'6"x16'6"
D. R. 12'6"x11'6"
D. R. 12'6"x11'6"
L. R. 18'0"x12'6"
F.A.L. 10'6"x16'6"
F.A.L. 10'6"x16'6"
LIVING ROOM 18'6"x12'0"
DINING ROOM 12'0"x11'0"
BED ROOM 11'0"x12'0"
BREAKFAST RM & KITCHEN 10'6"x9'0"
DINING ROOM 12'0"x11'0"
LIVING ROOM 12'0"x16'0"
BALCONY
IRON BALCONY
BALCONY
CORRIDOR
CORRIDOR
LIGHT SHAFT
LIGHT SHAFT
AUTOMATIC ELEVATOR
HALL
HALL
HALL
HALL
CLOSET
CLOSET
BATH
BATH
BATH
DRESSING LM
FRESH AIR ROOM
FRESH AIR ROOM
Living Room
DRESSING ROOM
DRESSING ROOM
BED ROOM
BREAKFAST ROOM & KITCHEN
KITCHENETTE
KITCHENETTE
FIRE ESCAPE
OPEN ABOVE
OPEN ABOVE
D.R. BAY
D.R. BAY
D.R. BAY

HOTEL ADAIR, SAN FRANCISCO
J. R. Miller, Architect

Suburban Apartment Houses*

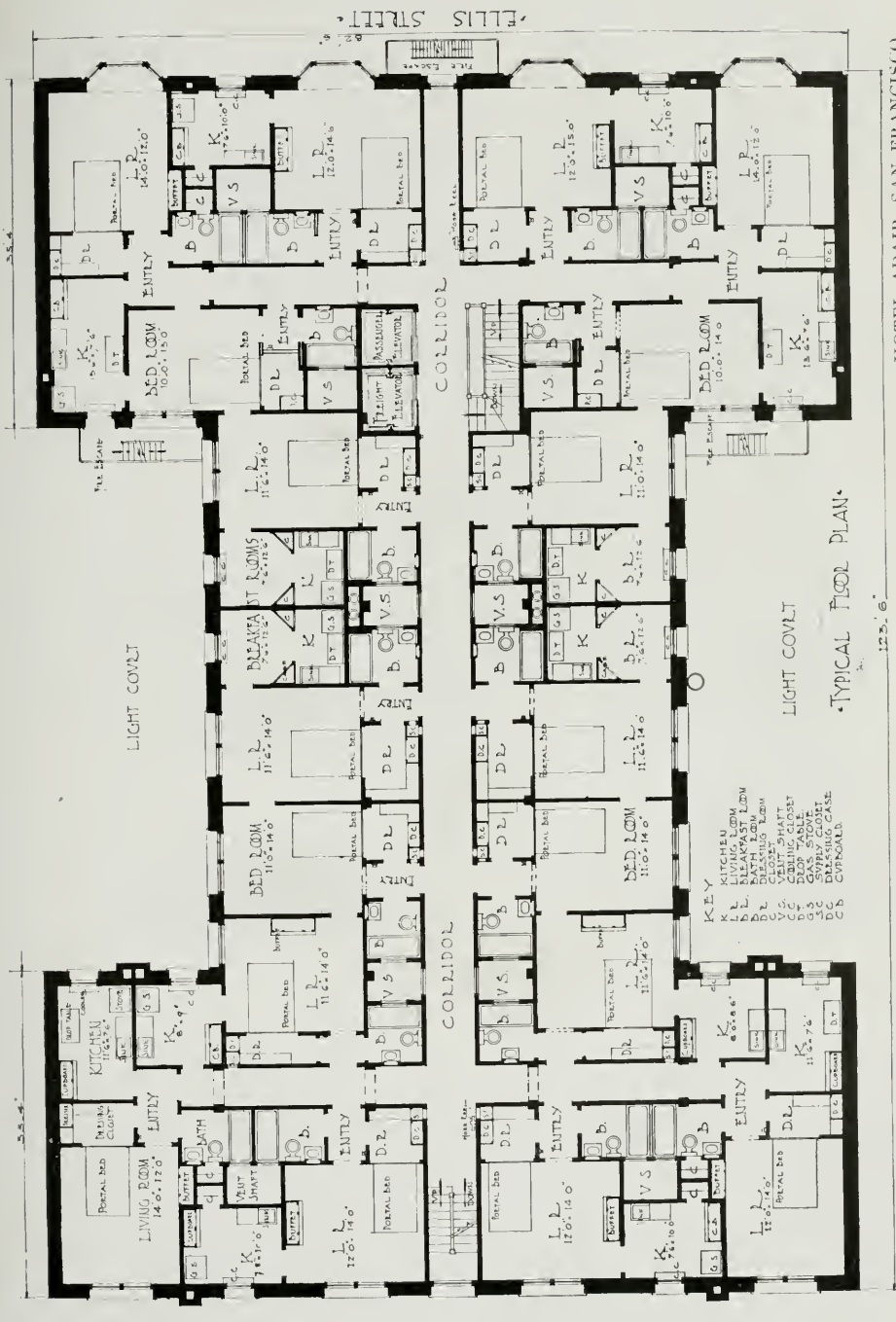
By MYRON HUNT, Architect, Los Angeles.

BY simplifying and by making city housekeeping less expensive, the apartment appeals strongly to the renting public. As a family residence it has inherent and obvious disadvantages. The intent of this article is to describe the means by which some of these disadvantages have been eliminated, and to describe the financial results thus obtained, when apartments have been planned for suburban sites.

An examination of the buildings given here as Suburban Apartments will necessarily show them to be much like all other minor apartments. Their distinguishing features result from the fact that to some extent suburban conditions are recognized. Lawns and trees are utilized. An effort is made to adapt the exteriors, and particularly the height of the buildings and their sky-lines, to local conditions. Each tenant is supplied with a separate porch or balcony.

The idea of putting up apartment buildings in anything but crowded residence districts has appealed to but few investors. In most cases when

*The Architectural Review.



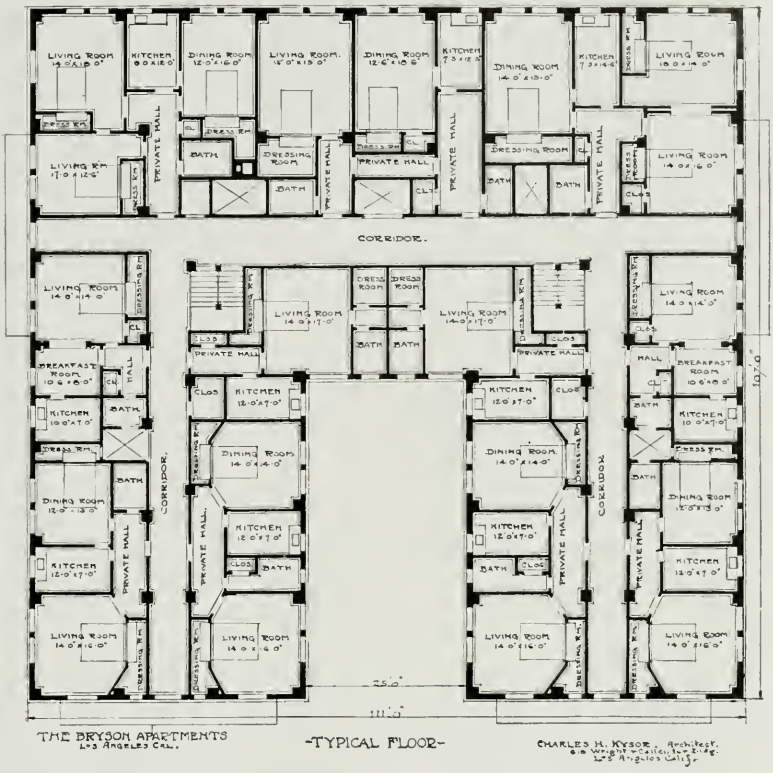
HOTEL ADAIR, SAN FRANCISCO
J. R. MILLER, ARCHITECT

BRYSON APARTMENTS, LOS ANGELES
Charles H. Kysor, Architect

such investments have been made, they have followed time-worn city lines. The result has been to emphasize the generally accepted belief that the better class of suburban tenants will consider nothing but detached houses.

The broad general philosophy which underlies the planning of all apartments is not affected by any question of location. Yet there is no reason why that diversity should not exist between the city and the suburban apartment which has always existed between the city and suburban house. Though many apartments are to be found in minor cities, there seems to be few buildings which may properly be styled "Suburban Apartments."

The comparative newness of the whole American apartment problem is no doubt one explanation of this lack of any marked development of a suburban touch in the design of the few examples which have strayed from the



BRYSON APARTMENTS, LOS ANGELES
Charles H. Kysor, Architect

immediate centers of population. There is a growing demand for apartments in suburban localities.

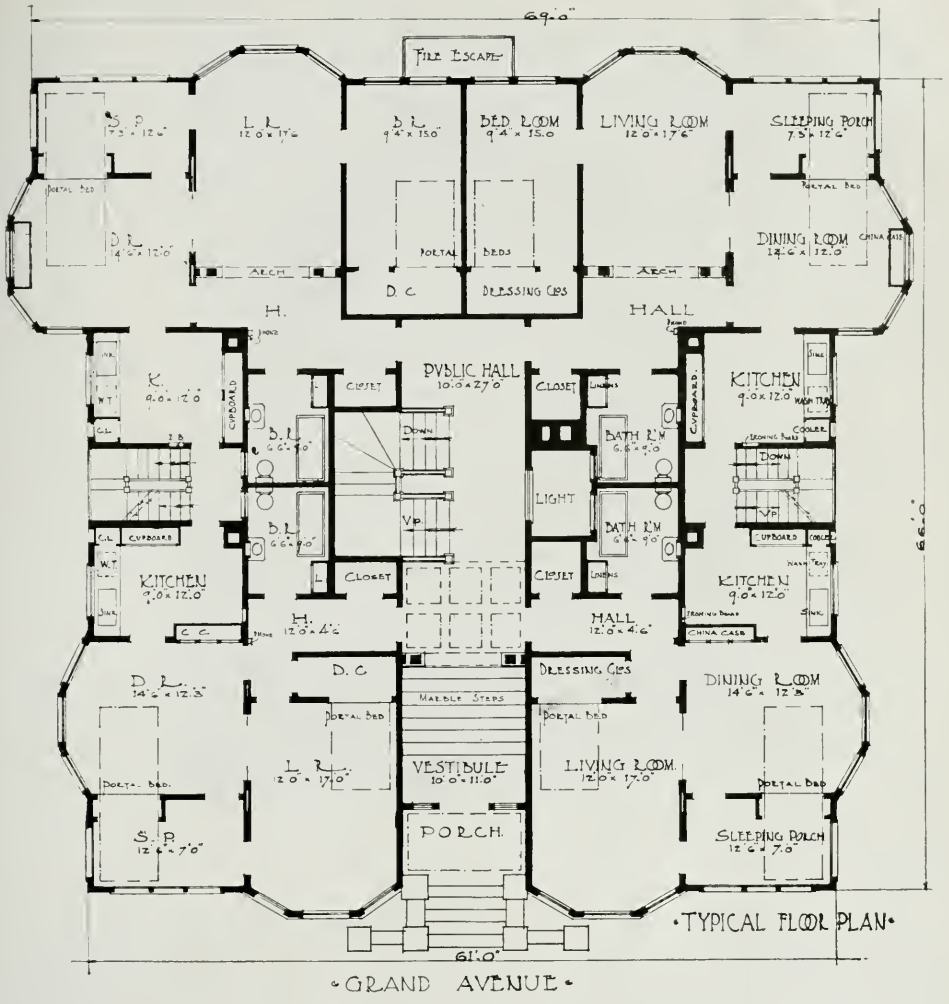
There is a contingent in every suburban community, composed of the best class of tenants, which needs what only an apartment can give. A city apartment plan cannot be made to appeal to them. If their interest is to be awakened, the building and all its details must be adapted to its suburban surroundings. These tenants comprise young married people, heads of families whose homes have been broken up, and to a large and increasing extent, unmarried men or women who wish the independence offered by a small establishment of their own. The average detached house entails more, either in expense or in energy, than they care to assume. They are accustomed to, or are hunting for, a degree of privacy in their homes. Such tenants as these have much difficulty in finding suburban homes to meet their wants.

The essential of a suburban apartment, in order that it shall be successful, is the utilization of trees and a lawn to obtain a setting. Another requirement also relates to exterior effect. It is that the designer shall appreciate the all-important advantages which result from a definite domestic feeling in the appearance of the building. Only one requirement which affects the philosophy of the plan is not necessarily applicable to all apartments. Each suite should have a private porch and as large a one as possible.

To be given a detached building to design is always a greater pleasure to an architect than to be asked to solve a problem which entails but one finished façade. The opportunities offered by a suburban apartment make at once possible and imperative the treating of the entire exterior as a whole. The four elevations will in most cases be equally important because equally in evidence. The same quality of material may fittingly be used on the rear and on the front. Not only may the blank party walls of a city apartment be avoided, they must be avoided in order to make a suitable building. Windows and bays take the place of blank walls and light courts. A roof which is in harmony with the roofing schemes of adjacent buildings naturally suggests itself. More than any other one feature of the exterior design, the roof may be made to help bring the whole appearance of the structure into accord with its suburban surroundings.

Little which is not wholly obvious can be said in regard to the advisability of utilizing natural landscape advantages in the erection of a suburban building. It is, however, a noticeable fact that few designers of existing apartments located in districts where large lawns with their accompanying trees and shrubs were possible, have in reality availed themselves of the advantages at their disposal. The comparative rareness with which an architect is asked to build an apartment in a suburb is not sufficient reason for any lack of adaptation to these more rarely met conditions. The inexpensiveness of unimproved suburban property makes the treating of the suburban apartment a problem distinct from the city apartment. Suburban conditions are such as not only to make this differentiation possible, but imperative.

LENNOX APARTMENTS, OAKLAND
Alvin Stern, Architect



PLAN, LENNOX APARTMENTS, OAKLAND
Alvin Stern, Architect

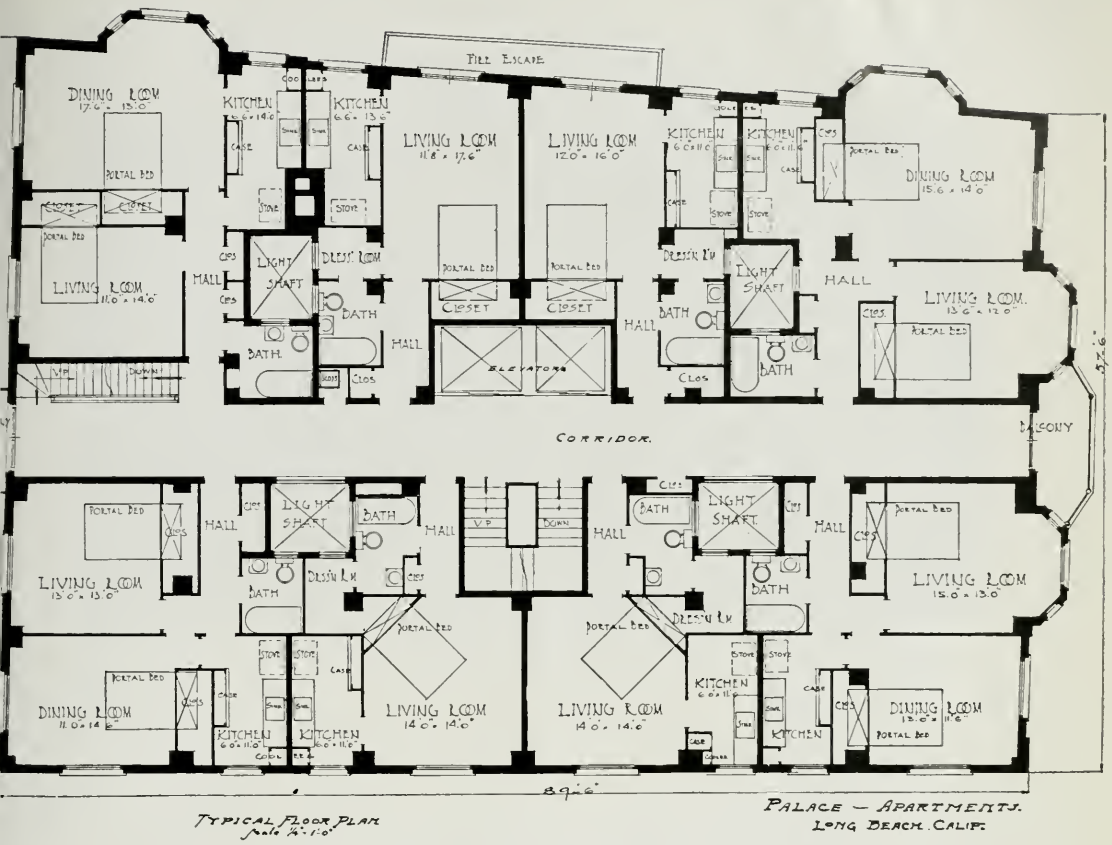
The value of suburban and semi-suburban land is based upon its eventual use for detached houses. A very natural error made by apartment builders who improve a suburban lot is that they cover too much of its available surface with the building. In so doing they lose that quality in the investment which must be made its saving grace, an appropriate setting for the building. Revenue producing possibilities have proven greatest when a considerable proportion of the available land has been devoted to a lawn. That domestic touch, to obtain which a lawn and trees are indispensable, is the especial, it is the actual revenue producing element in the investment. When the suburban building covers too large a portion of the lot, it loses its main charm. It also makes a bad name for itself in the neighborhood. Nothing is more certain to cause the building to be unpopular, and hence a socially unfortunate place of residence.

PALACE APARTMENTS, LONG BEACH
Paul C. Pape, Architect

The suburban investor must have greater consideration for his neighbors than is incumbent upon the city builder. It has been demonstrated that it pays handsomely to consider not alone the exterior design and the general arrangement of the rooms, not only the question of an individual lawn for the building, but equally the question of possible damage to adjoining property. Owners of improved suburban property usually have a disposition to place a social boycott upon apartments. In a city community each family is more nearly selfsufficient than is possible in a less densely populated community. * * *

General conditions which devolve upon all good apartment planning are not under consideration here. In discussing suburban apartments, I take for granted that today all apartments are planned in such a manner as to unite the living suites in a compact group of rooms opening together. The architect is assumed to have at his disposal a sufficient amount of property to be able to accomplish this. No exigencies arising from the exact size and shape of a city lot need be contended with. There is no need to discuss the proposition that service rooms should be isolated, or the principal sleeping-rooms be both grouped and isolated. The comparative inexpensiveness of suburban property simplifies the problem in these respects.

The commonest mistakes in minor apartment planning are those which follow from allotting too many rooms to each suite. An inexperienced in-



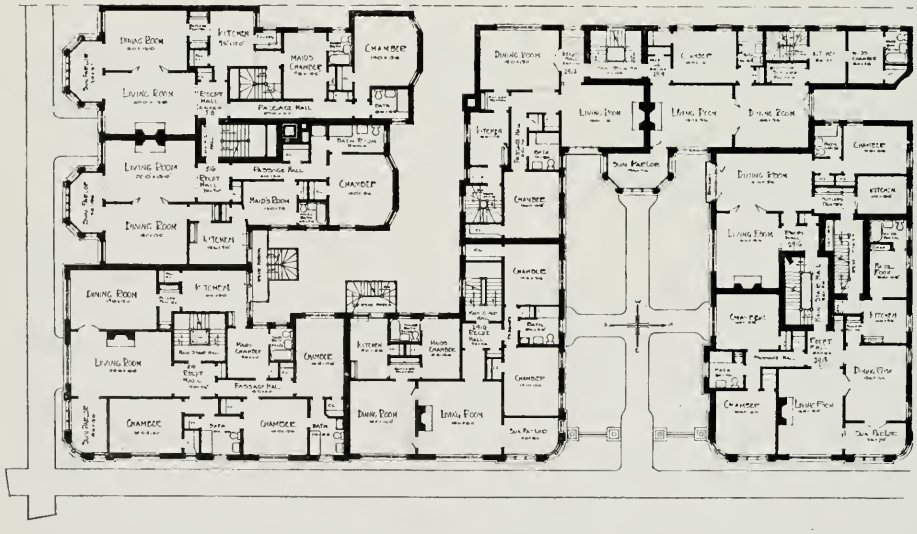
PLAN, PALACE APARTMENTS, LONG BEACH
PAUL C. PAPE, ARCHITECT

vestor almost invariably makes this mistake. It is a most serious error in suburban work. Speaking broadly, families who need more than five rooms, or at the outside, seven, will rent a detached house. It is to families requiring five rooms and less that the average suburban apartment may almost profitably be made to appeal.

The size of the various rooms must be determined largely by the locality and the amount of available money. It is, however, impossible to plan a wholly successful suburban apartment without making the rooms somewhat larger than they would be made in a city apartment intended for similar tenants. To some extent the suburban apartment must compete with the detached house. Its best tenants are former occupants of detached houses. The use of too great economy in allotting space to rooms proves a mistake.

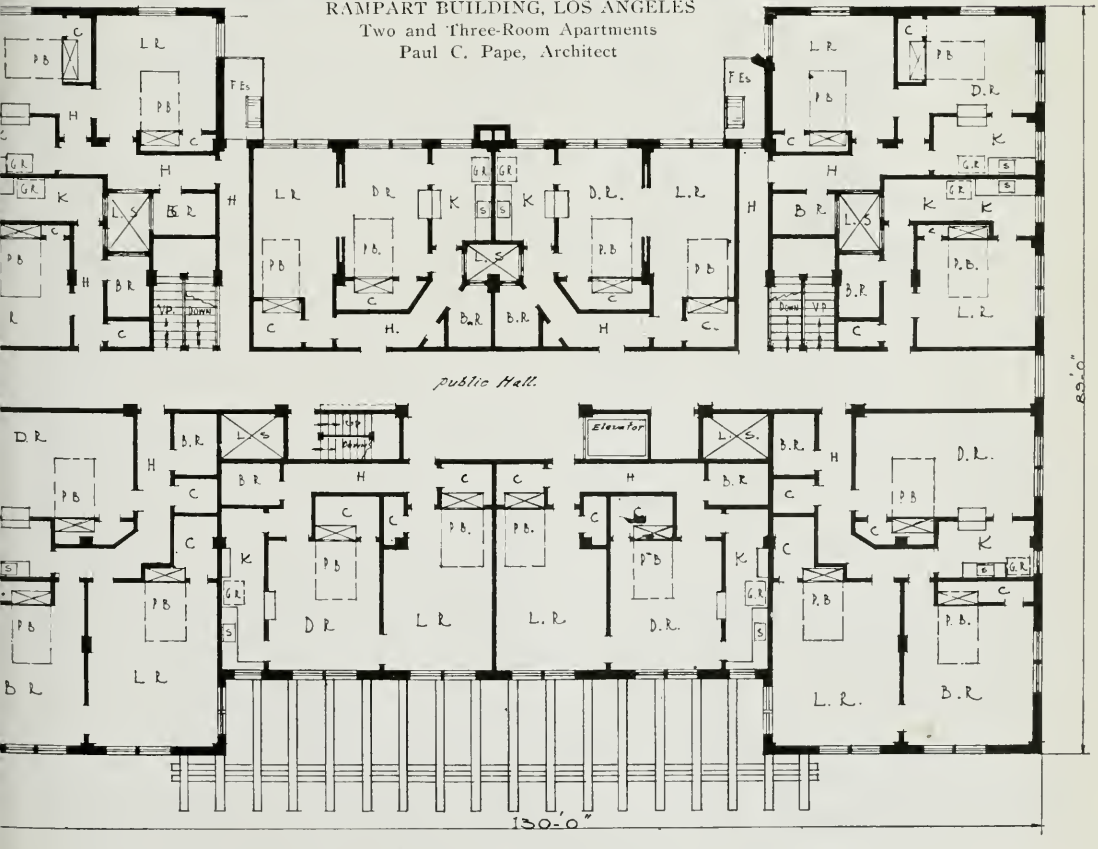
The competition of the suburban apartment with the small detached house comes out strongly in questions of convenient arrangement, in which the apartment has an easy advantage; it also comes out strongly in the question of homelike interior effects, in which the detached house has a natural advantage. An artistic and a homelike arrangement of the living portion of the suite is demanded. Too much stress cannot be laid on this point. Careful study may be profitably devoted to the details of wall coloring and the staining of woods. It must be kept constantly in mind that the best tenants

CHESTERFIELD APARTMENTS, CHICAGO, ILL.
From "Directory to Apartments of the Better Class."

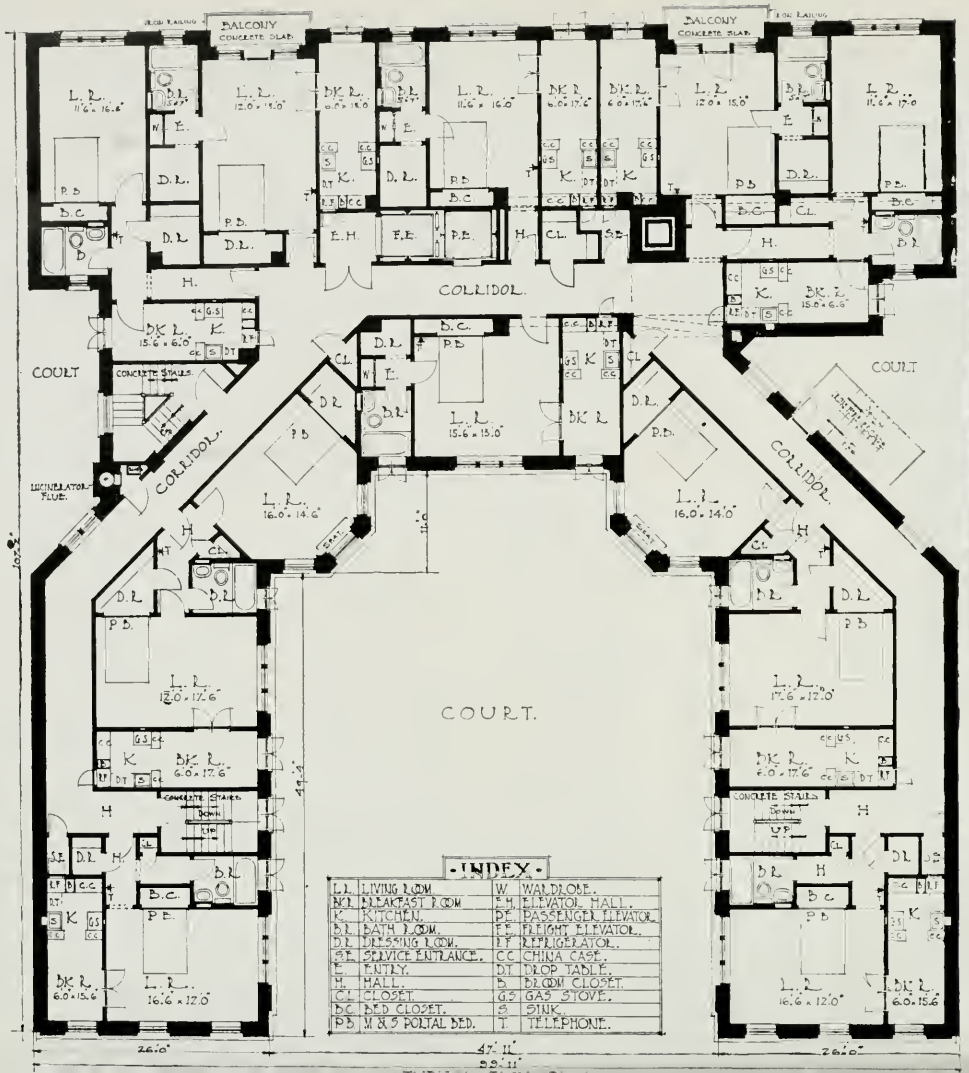


TYPICAL FLOOR PLAN, CHESTERFIELD APARTMENTS, CHICAGO, ILL.

RAMPART BUILDING, LOS ANGELES
Two and Three-Room Apartments
Paul C. Pape, Architect



TYPICAL FLOOR PLAN, RAMPART APARTMENTS, LOS ANGELES



FIRWOOD APARTMENTS, CHICAGO
All Two-Room Apartments
H. R. Wilson & Co., Architects

can only be obtained by combining the good features of an apartment with as many as possible of the points which make toward the perfection of a modern suburban home.

An architect who is familiar with the details of successful suburban house building, and who has not yet essayed the suburban apartment, will find it an interesting problem upon which to exercise his ingenuity. He will find that a building may be evolved combining with the best features of an apartment, many of the more distinctive features of the successful suburban home.

* * *

Fourteen Story Community Apartment House

ONE of the latest and most pretentious examples of community apartment houses in San Francisco is being designed by Mr. G. A. Applegarth, architect in the Claus Spreckels building, San Francisco, a perspective of which forms this month's cover design.

The building will be fourteen stories and will stand on the crest of Russian hill. Surrounded by gardens, it will look out upon a panorama of the Pacific ocean, the Golden Gate, the entire northerly and easterly bay shore and to the south down upon the busy life of the city.

The building is to be Class A, with steel frame, sound-proofed floors and walls, and automatic fire devices which will prevent the spreading of fire. Elevators will be of the high-speed traction type with new safety devices, making accidents impossible.

The interior of the various apartments will be designed to suit the taste and individuality of each owner, much latitude being allowed the owners of each apartment even in the arrangement in plan. The rooms are to be exceptionally large and a magnificent suite for entertainments will be afforded by the opening into one of the salon, dining room, library and reception hall.

Eighteen apartments of from seven to ten rooms will occupy the first nine stories. The two upper floors will form two single apartments of fourteen rooms each, consisting of a grand salon with loggia and open fireplace and recessed sideboards, a breakfast room adjoining, a billiard room, library and loggia, all grouped around a large reception hall.

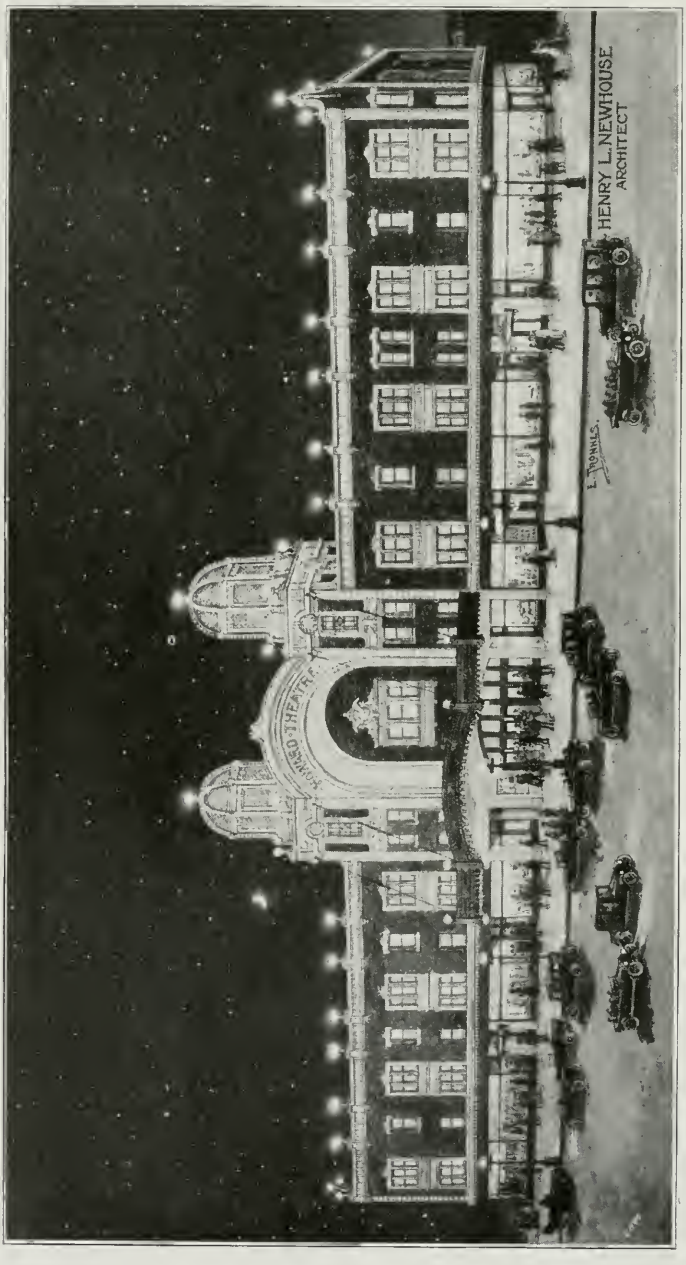
At the southerly end of the building are the bedroom suites, consisting of a principal chamber 20x24 feet, with adjoining boudoir, containing triple mirrors, cedar cabinet and fittings for every article of apparel. Baths will contain the finest fixtures and have separate showers and dressing-rooms. Other chambers will be equally complete. The culinary departments will consist of white tile and enamel, kitchens having forced ventilations, spacious adjoining pantries, storerooms, maids' rooms, with bath, extra service elevators and stairs.

There are two stories provided for extra servants' bedrooms on the ground floor, one for male and one for female help, and also spacious storage-rooms.

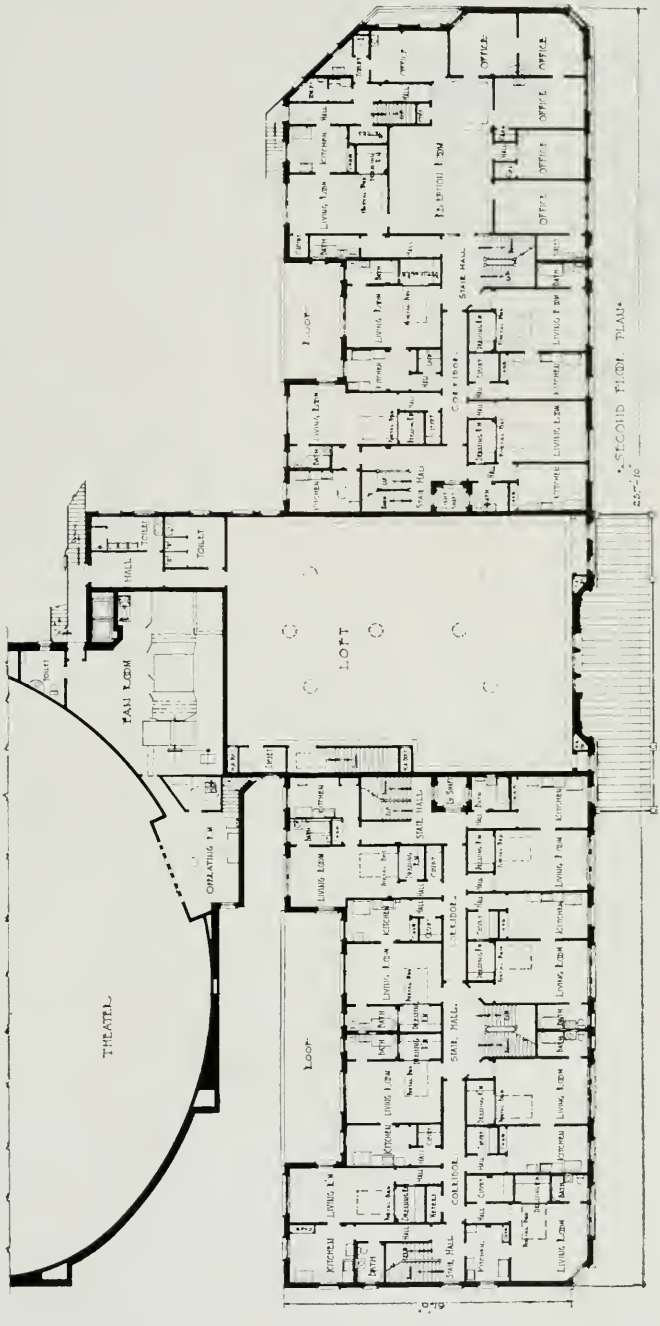
There are two entrances to the building, one from Larkin street, with a long marquise under which the automobiles can drive, and the other one from Francisco street, where the automobiles enter direct to the passenger elevator, which descends to that level.

A spacious garage is provided on this level, with room for two cars for each apartment.

This type of community apartment is now very popular in all large Eastern cities and has proved successful in the Greenwich Apartments San Francisco, which is inducing Mr. I. M. Green, the owner of the property, to erect this new building on the community plan.



HOWARD THEATRE AND APARTMENT BUILDING, CHICAGO
HENRY L. NEWHOUSE, ARCHITECT



PLAN, HOWARD THEATRE AND APARTMENT BUILDING, CHICAGO
HENRY L. NEWHOUSE, ARCHITECT

Wiring the Modern Apartment House

By CHARLES T. PHILLIPS, C. E.*

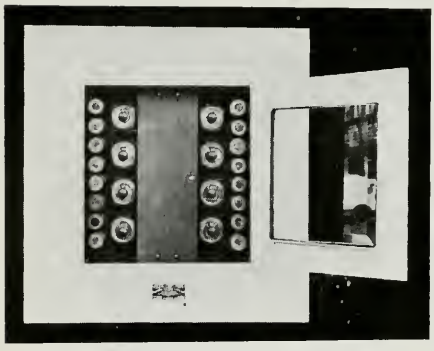


Fig. 2—Apartment House Switchboard.

THE modern apartment building, containing, as it does, a colony of city dwellers, is supposed to represent the acme of perfection in home building in as far as convenience and labor-saving devices are concerned. The heating of the individual apartment is performed by a central plant, thus saving the tenant all labor and worry in connection with this important feature. Vacuum cleaner service is included in the apartment rental; garbage disposal is cared for by the building management; each apartment is supplied with an individual refrigerator, the cooling of which is done by the circulation of cold brine from a central refrigeration plant, furnishing the tenant with cool drinking water and a safe storage for perishable foods. Elevators carry tenants from floor to floor and store deliveries are made to each apartment by a dumb waiter. Artificial lighting, the telephone and the door bell form important features in every modern dwelling and are not only too well known to comment upon but are appreciated only when they are out of commission.

The realization that electricity alone makes possible the many conveniences mentioned should stimulate the architect to provide ample facilities for the efficient operation of these conveniences. During the last five years there has been such a growing demand for electric cooking and heating appliances that it would be well for architects to acquaint themselves in detail with the possibilities of this mode of cooking and heating before preparing plans and specifications in any apartment building in which it is desired to acquire efficiency, convenience and comfort.

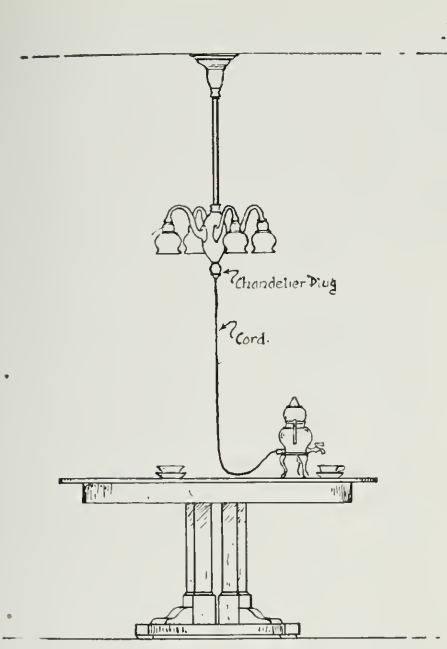
In the large majority of apartments, the tenants perform the household duties and they would be greatly interested in any means which would reduce labor and dirt accompanying the use of the more ancient devices associated with this work.

The study of kitchen arrangement should lead to effective labor saving, which is of prime importance to any household, especially in the modern apartment building that offers principally a solution of the servant problem. The selection of tools that will best eliminate waste motion is just as important in the kitchen as in a modern factory, and perhaps more so, as factory help is easier to obtain than house servants.

The modern apartment house dweller does not necessarily need the use of a kitchen for the purpose of preparing breakfast and several precious minutes of extra sleep can be enjoyed in the morning by means of electric cooking devices to be used on the dining table—the coffee percolator, egg boiler and toaster will take care of this need.

To eliminate the objectionable plug receptacle usually installed in the floor, a scheme has been devised, as shown in Fig. 1, by which these devices used at the table can be attached to the chandelier without interfering with the lighting or using the lighting sockets. These receptacles make also a convenient attachment for table lamps. In the kitchen a place should be provided for the small utility motor with buffer wheel and

*Pacific building, San Francisco.



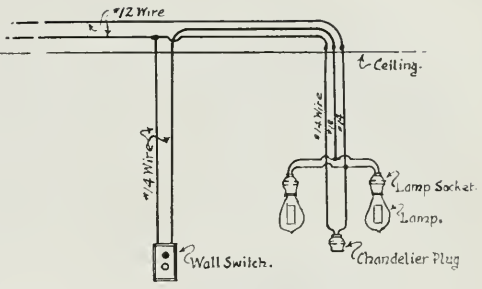


DIAGRAM OF WIRING.

WIRING SPECIFICATIONS.

Wire to center outlet in Dining Room (and other room as required) with one circuit of #12 wire.

Bring out three wires at outlet, one common, one from wall switch and one from ahead of wall switch.

FIXTURE SPECIFICATIONS.

Fixture shall have---sockets for lights and one Hubbell #5734 or similar 10 ampere chandelier plug. Wire stem of fixture with 2 #14 and 1-#16 wire. Connect to wiring so plug will be ahead of wall switch.

Fig. 1

emery wheel attached, by means of which knives can be sharpened, silver polished and other services performed efficiently and quickly. In the bath room ample light should be provided for shaving and plug receptacles for the attachment of electric vibrators, which are much used. At the dressing table in the bed room plug receptacles should be provided for curling irons and a good light, and near the bed additional receptacles for reading lamp, an electric heating pad and electric milk warmer for the baby.

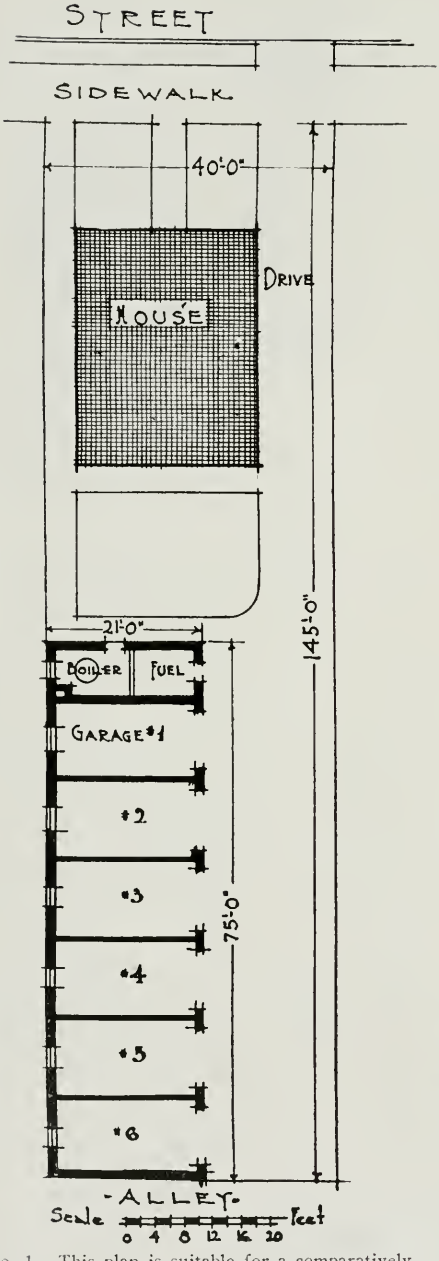
To provide proper wiring for the numerous pieces of apparatus requiring electric current, detailed plans and specifications should be provided. Switchboards should be of first-class construction, distributing panels should be of the safety type, as shown in Fig. 2, and all plug receptacles should be standard so that the plugs of the portable devices will fit. The apartment house tenant is becoming hypercritical and the owner who has foresight will provide his building with many conveniences of the type mentioned, thereby securing and retaining desirable patronage.

* * *

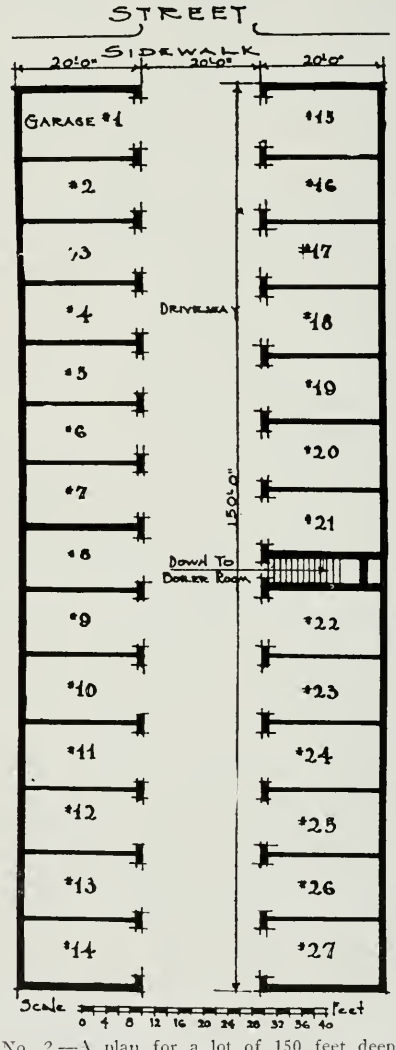
Lumber Freight Bill

The total annual freight bill of the lumber industry is estimated at about $215,000,000. Lumber and forest products furnish about 11 per cent of the total tonnage of the American railroads or about 215,000,000 tons yearly, according to Interstate Commerce Commission statistics. This total is greater than the movement of all agricultural products and is exceeded only by the tonnage of general manufacture and mine products.

Plans, Garage Court for Apartment Houses



No. 1.—This plan is suitable for a comparatively narrow lot. In a scheme of this sort the entrance from the street is often omitted, the only entrance being from the alley in the rear of the lot.



No. 2.—A plan for a lot of 150 feet deep by sixty feet wide. Where the units are built with the rear wall on the property line, it will usually be necessary to use small skylights to obtain light.

The Garage Court for Apartment Houses

THE next time that you are called on to build a private garage, suggest the garage court idea on your client. Garage courts are becoming more popular every day both from the investor's and the car owner's standpoints.

For a district that needs space for auto storage and yet does not justify the expenditure of the considerable outlay of money required for the erection and upkeep of a public garage, the garage court offers a simple and direct solution. Garage courts are usually built on the unused portion of a lot at the rear of a residence or apartment house and they turn this otherwise wasted space into income producing property. The operation of a garage court does not require the employment of an attendant; about all there is to do is to collect the rent and fire up the boiler night and morning during cold weather.

The distinguishing feature of the garage court which appeals to the car owner is the fact that with such an arrangement each occupant has what practically amounts to his own private garage. His tools and the small, removable parts of his car, which so frequently turn up missing in the public garage, are safely under his own lock and key; he can rest assured that his car is reasonably secure from joyriders and last, but not least, he is not denied the pleasure of giving his gas-fed steed the weekly rub-down.

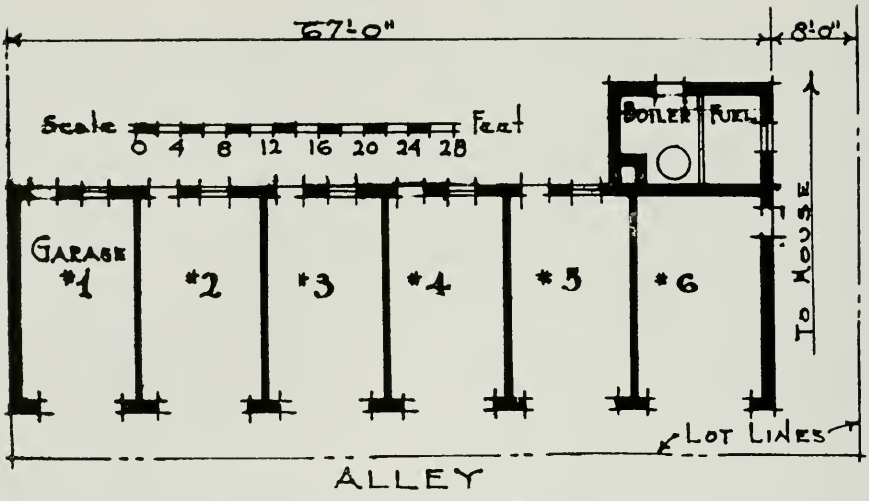
Each garage unit is entirely independent of the others. The number of units may be enlarged or reduced to any reasonable extent and is limited only by the size of the lot and the condition of the pocketbook. A good size of unit to hold average sized cars is ten feet wide and eighteen or twenty feet deep, between walls, this allows room to get around the work bench at the rear. For small cars the depth can be reduced to fifteen or sixteen feet, but it is better to make the units deep enough to hold any ordinary car.

For a real court—where a row of garage units is built down each side of the lot—the clear distance across the court should be not less than eighteen feet and a few feet more is better. The sketch plans illustrate several schemes for differently located garage courts on various sizes of lots. As in any other type of building, almost every job requires a different solution, but the sketches illustrate practical layouts that offer suggestions that may be employed in the solution of any particular problem.

Any of the ordinary building materials may be used in the construction of a garage court, says the National Builder, but they are usually made semi-fireproof, with 8-inch exterior walls of brick, tile, or concrete. The partitions may often be economically built of 4-inch gypsum partition tile. These tile are 12x30 inches on the face, are light in weight and lay up rapidly. Gypsum tiles are fireproof, but in a large garage court it is desirable to have an eight-inch brick fire wall between every six or eight garage units. This fire wall should extend at least eighteen inches above the roof.

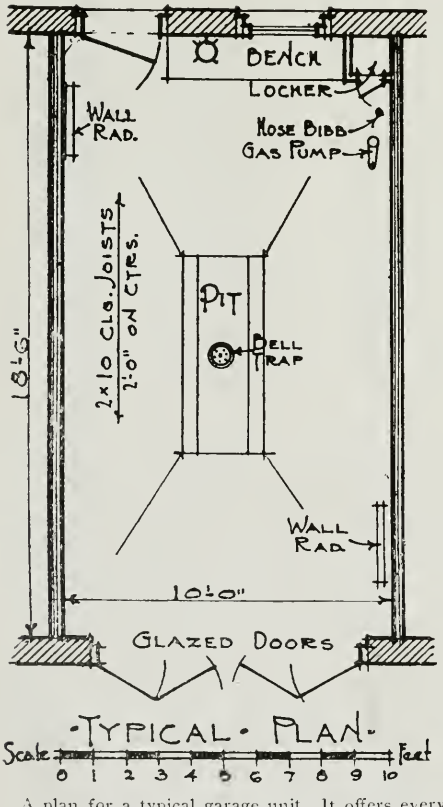
The floors should be of concrete. The open court may be either paved with concrete or merely surfaced with gravel. Concrete is of course to be preferred and if used it is laid sidewalk fashion, usually on a bed of cinders and is divided up into blocks about ten feet square with mastic filler in the joints to allow for expansion.

For the garage court to be wholly fireproof, the roof as well as the walls and floor, should be built entirely of fireproof materials. Either a



GARAGE SHED FOR APARTMENT HOUSE
No. 3.—This plan is suitable for rear portion of a wide lot.

concrete slab or one of the systems of concrete joists with tile fillers are suitable for this purpose. The latter types are light and require very little form-work for their erection. These roofs may be covered with prepared roofing to make them fully watertight.



A plan for a typical garage unit. It offers every advantage given by a private garage. If desired only a portion of the units might be equipped with gasoline pumps and storage tanks, and an increased rental asked for these.

If the roof is framed with wooden rafters, the roofing should be of fire resisting materials to prevent the spread of fire from outside sources. Metal, or some of the prepared roofings that are practically incombustible are suitable.

The garage units should be well lighted so that the car owner can see to make repairs. This is best accomplished by means of glazed panels in the upper portions of the front doors and by windows in the rear walls.

Electric lighting should always be provided when it is possible to obtain it.

In cold climates it will usually be necessary to furnish heat to keep the temperature of the garage above freezing. Private garages are sometimes built without a heating system, but very few car owners will rent garage space if there is no protection from frozen cylinders and radiators.

The heating plant may be an inexpensive system of the steam or hot water type, with only enough radiation to keep the temperature above freezing during the coldest weather.

HOTEL LANKERSHIM, SAN FRANCISCO
Reid Bros., Architects

Wall Beds Used in Many Buildings Besides Apartment Houses

CONTRARY to the general impression of many architects and owners, wall beds are adaptable not only to apartment houses but are valuable space savers in bungalows, hotels and even public buildings, such as court houses where accommodations are necessary for the all-night jury. It is claimed a good wall bed will save the owner the cost of a room and such economy is a mighty important item in these days of high cost of building materials.

In showing pictures of a number of hotel buildings, court houses and bungalows in this apartment house number the purpose is to impress upon the reader the adaptability of wall beds to other types of construction than apartment houses. And while dwelling on the value of the wall bed as a space saver, the fact should not be overlooked that there are other equally important devices that architects and owners are beginning to appreciate and specify when planning a house or apartment. One of these is the kitchen cabinet which does away with a lot of waste closet room and serves as a wonderful aid to the methodical house wife.

Then there are various types and styles of built-in furniture, such as ironing boards, sideboards, window seats, desks, tables, etc.

APARTMENT · HOUSE · FOR · PUGET · SOUND · NAVY · YARD
AT · BREMERTON · WASHINGTON
FOR · THE · U.S. · HOUSING · CORPORATION
H. ALBERTSON · ARCHITECT · SEATTLE, WASH.

APARTMENT HOUSE, BREMERTON, WASHINGTON
FOR UNITED STATES HOUSING CORPORATION
(Two and Three-Room Apartments)
A. H. ALBERTSON, ARCHITECT

INTERIOR LIVING ROOM. PORTAL BED CONCEALED BEHIND FRENCH DOOR EFFECT

THE SAME ROOM AS ABOVE, SHOWING BED READY FOR USE. NOTE OPENING TO CLOSET IS ENTIRELY CLOSED.

PORTAL BED WITH DOOR WIDE OPEN, SHOWING THREE-FOOT ENTRANCE TO DRESSING CLOSET.

PORTAL BED TURNED AT AN ANGLE, ALLOWING FREE ACCESS TO CLOSET WHEN BED IS READY FOR USE.

Present Cost of Building Materials

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, September 20, 1919. All prices f. o. b. San Francisco.

Note.—For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $33.00 per 1000 laid.
Face, $80.00 per 1000 laid.
Common, f. o. b. cars, $15.00.
Face, f. o. b. cars, $47.50.
Terra Cotta Tile Partitions—
12x12x2 in., 18c. per square foot
12x12x3 in., 21c. per square foot.
12x12x4 in., 25c. per square foot.
12x12x6 in., 30c. per square foot.
Hod carriers, $7.00 per day.
Bricklayers, $9.00 per day.

Composition Floors—30c. per sq. ft.

Concrete Work (material at bunkers)—

No. 3 rock	$2.00 per yd.
No. 4 rock	2.10 per yd.
Niles pea gravel	2.10 per yd.
Niles gravel	2.10 per yd.
Niles top gravel	2.00 per yd.
City gravel	1.75 per yd.
River sand	1.25 per yd.
Bank sand	.75 per yd.
Monterey sand	60c. per sack
Cement (F. O. B. cars)	$3.03 per bbl.

Rebate for sacks, 15c. each.

Medusa cement	9.50 per bbl.
Forms	$60.00 per M

Wage—

Laborers	$5.00 per day
Concrete workers	6.00 per day
Cement finishers	8.00 per day

Dampproofing—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $8.00 and $9.00 per day.

Electric Wiring—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies.

Excavation—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

Glass—
21 ounce, 25c. per square foot.
Plate, 80c. to $1.25 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
WAGE—Glaziers, $8.00 per day.

Lumber—
Common (at building), $55.00 per 1000.
Flooring—

1x3 No. 1	$98.00 per 1000
1x3 No. 2	90.00 per 1000
1x4 No. 1	88.00 per 1000
1x4 No. 2	85.00 per 1000
1x4 No. 3	78.00 per 1000
1x6 No. 1	93.00 per 1000
1x6 No. 2	90.00 per 1000
1¼x4 and 6 No. 1	93.00 per 1000
1¼x4 and 6 No. 2	88.00 per 1000
Slash grain, 1x4 No. 1	72.00 per 1000

Shingles—

Redwood,	No. 1	1.40 per bdle.
	No. 2	1.30 per bdle.
Red cedar		1.75 per bdle.

Hardwood Lumber—	Per ft.
1" FAS Ash	20c.
1" FAS Birch	17½c.
1" FAS Southern Red Gum	17½c.
1" FAS Jenisero (Genezero)	16½c.
1" FAS Hawaiian Koa	24c.
1" FAS Mahogany	35c.
1" FAS Maple	17c.
1" FAS Plain Oak	20c.
1" FAS Quartered Oak	30c.
1" FAS Walnut	35c.

Hardwood Floors—
Maple floor (laid and finished), 27c. per foot.
Factory grade floors (laid and finished), 24c. per foot.
Oak (quartered, finished), 35c. per foot.
Oak (clear), 30c. per foot.
Oak (select), 27c. per foot.
WAGE—Floor layers, $9.00 per day.

Wybro Veneered Panels—

24x60 in., ¼ in., 3-ply, 1 side.	Per ft.
Ash	19½c.
Hungarian Ash	29¼c.

Birch .....19½c.
Curly Birch .....28½c.
Elm .....18c.
Jenisero (Genezero) .....28½c.
Southern Red Gum.....22½c.
Qtd. Southern Red Gum.....28½c.
Hawaiian Koa .....29¼c.
Maple .....18c.
Birdseye Maple .....34½c.
Mahogany .....28½c.
Oregon Pine .....14¾c.
Plain Oak .....22½c.
Quartered Oak .....28½c.
Walnut .....28½c.
Wybro Board ..... 9¾c.

Millwork—
O. P., $110.00 per 1000.
R. W., $110.00 per 1000.

Labor—
Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
Double hung box frame windows (average) with trim.....$9.50 each
Doors, including trim (single panel) ..... 9.00 each
Doors, including trim (five panel) ..... 7.50 each
Screen doors ..... 4.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchens and pantries, seven feet high, per lineal foot 8.00
Dining room cases same price, if not too elaborate.
Flag poles, per foot..... 1.50
Base, picture mould, moulding, etc. .....$110.00 per M
WAGE—Laborers, $5.00 per day.
Carpenters, $8.00 per day.

Marble—
Columbia .....$1.50 sq. ft.
Alaska ..... 1.50 sq. ft.
Tennessee ..... 1.75 sq. ft.
Verde Antique ..... 3.00 sq. ft.

Painting—
Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

Patent Chimneys—
6-inch .....$1.50 lineal foot
8-inch ..... 1.75 lineal foot
10-inch ..... 2.25 lineal foot
12-inch ..... 3.00 lineal foot

Pipe Casings—$10.00 each.

Plastering—
Interior, on wood lath, 60c. per yard.
Interior, on metal lath, $1.10 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Interior on brick or terra cotta, 50c. per yard.
Exterior, on metal lath, $1.80 per yard.
Wood lath, $8.00 per 1000.
Galv. (metal lath), 38c. and up per yard, according to gauge.
WAGE—Hod carriers, $7.50 per day.
Plasterers, $9.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for less than car load lots, $4.35 per 100 lbs.
Car load lots, $3.60 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

Roofing—
Five-ply tar and gravel, $6.50 per square.
Tile, $35.00 per square.
Redwood shingle, $9.00 per square.
Cedar shingle, $10.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

Rough Hardware—
Nails, per keg, $5.25 base.
Deafening felt, $100.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Skylights—
Copper, $1.25 a square foot.
Galvanized iron, 50c. a square foot.
WAGE—Sheet metal workers, $7.00 per day.

Store Fronts—
Kawneer copper bars for store fronts.
Corner, center and around sides, will average $1.35 per lin. foot.

Structural Steel—$150.00 per ton.
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

Tile—
White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

Windows—
Metal, $2.00 a square foot.

A PLASTER HOUSE IN SOUTHERN CALIFORNIA

BUNGALOW, LOS ANGELES

Competition for a Hollow Tile House

AN architectural competition for a one-story hollow tile house to cost $5,000 is being conducted by the Los Angeles Pressed Brick Company, to stimulate interest in hollow tile construction and to bring out, if possible, some new and attractive designs in this material.

The competition is open to all architects, designers and draftsmen in California and Arizona. By an error in the August number of this magazine the first prize was given as $500. The amount should have been $300. The time for submitting designs has been extended to December 1st and the awards will be announced in the December issue of The Architect and Engineer. The Judges will be Messrs. Garrett Van Pelt, Jr., of Pasadena, John C. Austin and D. C. Allison of Los Angeles. The program for the competition is as follows:

PROGRAM FOR AN ARCHITECTURAL COMPETITION

FOR A ONE-STORY HOLLOW TILE HOUSE TO COST NOT EXCEEDING FIVE THOUSAND DOLLARS.

The competition will be conducted by the Los Angeles Pressed Brick Company, under the auspices of the American Institute of Architects, and is open to all architects, designers and draftsmen of California and Arizona.

The competition closes at 5 p. m., Monday, December 1, 1919. The prizes will be as follows: 1st—$300.00 cash; 2nd—$150.00 cash; 3rd—$100.00 cash; 4th—$50.00 cash; 5th—First Honorable Mention; 6th—Second Honorable Mention; 7th—Third Honorable Mention; 8th—Fourth Honorable Mention.

Problem: The design of a one-story house, exterior walls of which are to be of 8-inch hollow tile, and the roof of which is to be of clay tile.

The total cubage is not to exceed 16,500 feet inclusive of porches, basement and roof spaces; and the actual cost, complete, is limited to $5,000, inclusive of heating, plumbing, electric wiring and painting.

The house is to be located on a level, inside suburban lot with an eastern frontage of 50 feet and a depth of 150 feet. Building restrictions fix the front main wall of the house at not less than 35 feet from the front property line, and not less than 5 feet and 10 feet respectively from the side property lines. Access to the garage must be provided from the street.

The plan of the house must be suitable to a family of moderate means, and must comprise at least five rooms. Two of the five rooms must be sleeping rooms.

The house is to be built in a semi-tropic climate, and this fact must be well considered, both in the plan and exterior design. Otherwise the architectural treatment and the plan arrangement are left entirely to the option and ingenuity of the contestant.

TWO DRAWINGS REQUIRED: One drawing showing an accurately-constructed perspective of the house, at a scale of ¼ inch to the foot, and a detail of the front entrance at a scale of ¾ inch to the foot..

One drawing comprising a floor plan and lot plan, at a scale of ⅛ inch to the foot; a basement plan at a scale of ⅛ inch to the foot, and a detail wall section from footings up to and including the cornice at a scale of ¾ inch to the foot. On this sheet also must be an accurate itemized estimate of the cubage. In connection with the floor plan, the entire development of the lot is to be shown, indicating walks, drive, garage, planting, etc. Graphic scales are to be shown, in all cases, in connection with the subject to which they apply.

Both drawings must be entirely in undiluted black India ink on Whatman's hot-pressed, or similar, drawing paper. Both must be exactly 20 inches by 24 inches in size, over all, with a plain border line drawn 1 inch from the outer extreme edges, making the size within the border exactly 18 inches by 22 inches.

Each drawing is to have the general title:—"Design for a One-story Hollow Tile House to Cost $5,000.00." The drawings are not to bear any motto, device or distinguishing mark, nor shall they be signed with the name of the designer.

BASIS OF CUBAGE ESTIMATE: The cubage of the house proper shall be the actual number of cubic feet enclosed between the outer faces of exterior walls and between the finish grade line and the outer surface of the roof. Open-sided porches and pergolas are to be allowed for at one-fourth their actual cubage, while unroofed

porches or terraces in connection with the house are to be allowed for at 1½ cubic feet per square foot of area. The total cubage shall be the sum of the above parts and must not exceed 16,500 feet.

CAUTION: The cubage and probable cost of each design will be carefully checked before the awarding of the prizes, and any design that exceeds the stipulated limiting cubage of 16,500 feet or on the other hand, that is within the cubage limit but yet would obviously exceed in cost the stipulated sum of $5,000, will forfeit any chance of award. It is the intent of this competition to produce a house, or houses, that can actually be built for $5,000, and between any two prize-winning designs within the limiting cubage and of equal architectural merit, that one which, in the opinion of the jury, will cost the least, will receive the larger prize

DELIVERY OF DRAWINGS: The drawings are to be sent flat, either by mail, express, or messenger, prepaid, without the contestant's name or address on the package or drawing, to the Los Angeles Pressed Brick Company, Sixth Floor, Frost Building, Los Angeles, Cal., arriving there not later than 5 p. m., Monday, December 1, 1919. In the upper left-hand corner of the package shall be lettered: "Competition Drawings for a One-story Hollow Tile House." Enclosed in the package with the drawings is to be a sealed envelope bearing the name and address of the contestant. Drawings and accompanying sealed envelopes containing the authors' names shall be numbered upon receipt, the envelopes remaining unopened until after the award of the prizes.

The cash-prize drawings are to become the property of the Los Angeles Pressed Brick Company, and they also reserve the right to exhibit or publish any or all of the others.

Non-Prize-Winning designs and honorable-mention designs will be returned to the contestants, prepaid, as soon as possible after the awarding of the prizes.

Awards will be announced in "The Southwest Builder and Contractor" and in "The Architect and Engineer" as soon as a decision is reached by the jury of award, and prizes will be granted immediately thereafter.

* * *

A Commercial Center for the City of Honolulu

MR. Louis Christian Mullgardt recently returned to San Francisco from Honolulu where he arranged for the construction of a large wholesale commercial building for Theo. H. Davies & Company, Ltd. This is the first of a new series of commercial buildings to be built in the Island Metropolis.

The structure occupies the entire city square facing Bishop, Merchant, Alakea and Queen streets and covers an area of over 60,000 square feet. The building consists of four high stories which are in some instances subdivided into eight stories including a serviceable flat roof having a total area of over 360,000 square feet.

The building will be fireproof in every detail. Its structure will be of reinforced concrete enclosed with hollow tile and enamelled terra cotta.

All sash, doors and interior finish will be of metal. The public walks and drives will be granite. The floors will be of marble mosaic. Cement finish will be used throughout the storage rooms designed to accommodate wholesale drygoods, hardware and grocery departments.

The directors and accountants offices occupy one fifth of the ground floor adjoining the main entrance at the corner of Bishop and Merchant streets. There will be a splendid court near the center of the building built of enamelled terra cotta. This court is surrounded by directors offices and employees rest rooms, and will be tropically planted and contain a fountain and aquarium. This court will be used as a place of recreation and furnish daylight and air into the surrounding offices and departments.

The building is nominally divided into three equal subdivisions in its full height. The center portion to be used by the hardware department

flanked by the grocery department on Alakea street and by the accounting and drygoods departments on Bishop street.

The trucking for all departments will be on Queen street. The building will contain seven electric freight and passenger elevators automatically controlled. The elevator machinery has been arranged overhead instead of below, as is customarily done. There will be five spiral chute conveyors which provide direct means of prompt delivery from all floors to points of shipment on the ground floor.

The building will not have a basement. All floors being located above the ground where ample light and ventilation is obtainable.

The flat roof covering the entire building of 60,000 square feet will be covered with floor tile. It is designed to be used by the employees as a place for recreation and by visitors as a place of observation. The park-like City of Honolulu nestles between a range of verdured mountains and the sea and is exceptionally interesting to the observer when viewed from an elevation corresponding to the height of this structure.

The entire building will have a complete inter-communicating telephone system with a central station located in the accounting department.

The working drawings for this structure were completed in the Spring of 1918, construction having been delayed until now, due to the world war. Messrs. Theo. H. Davies & Company, Ltd. are desirous to complete the structure as soon as possible, their rapidly increasing business requirements are far greater than their present housing can satisfactorily accommodate. It will require fully one year in which to complete the work.

Mr. Mullgardt has prepared preliminary drawings for seven commercial structures which are intended to comprise the first unit group of the proposed new commercial center for the City of Honolulu.

The primary object of the business representatives of Honolulu is to create a co-ordinate scheme of commercial buildings which are truly appropriate to Honolulu and to their various needs and to the end that they will serve as a permanent monument to its citizens and in the interest of a united population. The object is to obtain a perfect architectural expression as is obtained with the strings and brasses of an orchestra, whereby individual predilections unite in creating a composite achievement, which does not obliterate individuality and leaves a harmonizing personality to each structure in its relationship to the other. The result will in no sense be of a stencil pattern, but a composite ensemble of harmonious expressions instead of the customary heteregeneous mass of structures which although architecturally good in themselves, have a clashing effect upon each other similar to the walls of an art gallery which are poorly hung with a variety of unrelated pictures of varying degrees of color and intensity, large and small, closely crowded together.

* * *

Concrete Building Blocks Faced with Marble

The U. S. Bureau of Standards during the past month has been making tests of concrete building blocks faced with marble, to determine the strength, security of bond, and resistance to the action of frost. The results of this work showed that blocks of this character are suitable for use in construction. They are of some importance in that they will permit of the utilization of waste marble, at the same time affording a very attractive facing material.

Congress and Architecture

THREE measures of interest to the architectural profession are before the present congress. First, the bill to continue the Bureau of Housing in the Department of Labor, at least until it can be determined whether or not it can profitably be maintained as a desirable governmental activity in the compilation and distribution of information in all that pertains to the great problem of housing.

Second, and in opposition to this bill, is the one which would oblige the administration to close the doors of the Housing Bureau and compel the immediate sale, at no matter what sacrifices, of the housing properties now owned and controlled by the government through the United States Housing Corporation. Manifestly such a bill is highly undesirable, for it is against public policy and in the interest of those who would, if possible, coin a profit out of the country's great war emergency expenditure. The government should retain control of these properties until their values can be determined.

Third, there is the project for the establishment of a Department of Public Works, along the lines suggested at the recent conference in Chicago, held under the auspices of the Engineering Council and participated in by the American Institute of Architects. Such a project has long been urged by the institute, and it is pertinent to point out that Mr. Newell, in outlining the advantages of such a department to the conference, laid emphasis on the value it might have in bringing about the adoption of the budget system for our government. Certainly such a change must precede any logical usefulness of a Department of Public Works, for until the present method of appropriating money for public buildings and works is revised, no great progress could be made in placing such governmental expenditures upon a sound legitimate basis.

It is evident that the architectural profession has a laborious task ahead in bringing about a reversal of policy on public building appropriations and design, but it is equally true that the national budget system is making strides forward, and that the country as a whole may be expected more closely to scrutinize national expenditures in the future, when the whole burden of the war begins to be felt more and more keenly.

* * *

Workers Leaving United States

During the month of June, 1919, the number of persons who left America for Europe averaged 1,000 per day. These consisted chiefly of people from the laboring classes, the greater portion going back for good. In a single day 5,000 Italians, mostly men, left New York for their home land. Cheaper land, better wages and lower cost of living are expected abroad, as well as a chance to aid relatives and help in the rebuilding of their country. The amount of money taken along by each of these immigrants undoubtedly is large and will prove a serious drain on the wealth of the United States if, as is expected, this exodus continues for any considerable time But it is not alone the loss of this money which will create a serious condition, it is the reduction in the number of common laborers which are and will be so greatly needed here. Possibly this explains why common laborers are able today to demand and receive a daily wage of $5 and $6.

THE
Architect and Engineer
INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $4.50 per annum; to Canada 75c additional; to all Foreign points $1 additional.

Vol. LVIII. SEPTEMBER, 1919 No. 3

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Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchwurd be order and your beacon beauty."

THE CALIFORNIA STATE BOARD OF ARCHITECTURE

Mr. Schnaittacher, secretary of the State Board of Architecture for the Northern District of California, takes exception to the criticism of himself and the Board in recent issues of this magazine. We expected he would.

Mr. Schnaittacher has written a letter in which he admits exactly what this magazine complained of—that the State Board has not been very active of late.

The secretary blames the war for this and says that for a period of nearly two years only seven certificates have been issued to practice. The war has been over now nearly a year and with its close has come an influx of new practitioners, yet according to Mr. Schnaittacher's letter only three licenses have been issued and these three in February of this year, to holders of licenses from other cities.

In stirring up the State Board this magazine seeks only to promote the best interests of the profession. The registered architect is entitled to protection, and it is within the powers of the State Board to help enforce the law.

Regarding the publication of the names and addresses of successful candidates The Architect and Engineer has not received any names officially from Mr. Schnaittacher for more than two years, although requests have been made of him. The Southern California District, however, has made public on frequent occasions, the names and addresses of all candidates passed at its meetings.

Mr. Schnaittacher's letter follows:

An editorial in the August number of the Architect and Engineer would have it appear that the California State Board of Architecture, Northern District was negligent in the performance of its duty and that the Secretary had neglected to comply with a reasonable request for a list of candidates who had been passed by the Board. The statements made are misleading and incorrect and the writer expects that proper publicity be given to the facts herein stated.

It is the custom of the Board to furnish the public press, together with the Daily Pacific Builder and your publication, with a list of candidates passed by the Board. That the writer of the editorial may have received the impres-

sion that the Architect and Engineer had not been furnished with these lists is due perhaps to the few candidates who have either made application or who have been passed by the Board since 1917.

The Board during all of 1918 and up to the present time, has issued certificates to practice to but seven candidates. One was passed at the March, 1918, meeting, three as a result of a written examination in May, 1918, and three granted in February, 1919, to holders of licenses from other states.

To anyone at all familiar with the situation, it should be readily apparent that during the war period and immediately following there would be both a scarcity of candidates and few reports of violations of the Act. The Board has followed up many cases in which it would appear that the Act Regulating the Practice of Architecture had been violated, but the investigation of these cases has invariably resulted in finding no grounds upon which a legal conviction could be based.

Yours very truly,

SYLVAIN SCHNAITTACHER, Secretary.

San Francisco, August 26, 1919.

NATIONAL CHAOS IN PUBLIC BUILDINGS

During the years 1907-1916, inclusive, the United States Government spent for building construction an average of $20,000,000 per annum. These figures demonstrate that it is the largest single agency in this country engaged in work of this nature.

Strangely enough, it does not act as a unit; on the contrary, it acts as nine or ten separate and independent agencies. In fact, there are several instances of bureaus in a department working independently of one another.

In the Treasury Department, the office of the Supervising Architect and Coast Guard construct buildings; in the Department of the Interior the Reclamation Service, National Park Service, and the office of the Indian Affairs act in these matters; in the Department of Agriculture there are four branches, viz.: Forest Service, Weather Bureau, Bureau of Animal Industry, and the Bureau of Experiment Stations; the Department of Commerce has one—the Light House Bureau—that builds.

Certain types of buildings are of like character—hospitals might be mentioned as an example. These buildings require special investigations and studies, and yet we find this work handled by the Treasury, Army and Navy Departments. This involves duplication of effort and consumes an unnecessary amount of time and money.

What private corporation would allow each of its several departments to maintain separate building organizations? Such corporations naturally centralize work of this character in order to avoid mistakes and waste of time and money. They also consider it essential to economize in every possible way by buying materials wholesale and by standardizing materials and methods. It was found that economies could be effected by standardizing appliances such as pertained to plumbing, steam heating, hardware and mill work. The economy of such standardization is readily apparent.

Should not the lessons taught by war industries, private corporations and European countries be brought to bear upon our own problem to the great advantage of the taxpayers? An unlimited taxing power is not sufficient justification for the tremendous waste that is inevitable under the present disjointed method of handling the work.

If this work were centralized in one department it could visualize the building situation throughout the country, and if it were found that slack times were coming or that a great dearth of building existed in a portion of the country, an effort could readily be made by the Government to fill the gap. With the knowledge that approximately so much business was to be done for the coming year it would be possible to assure manufacturers of material and labor engaged in construction, of steady employment. By the standardization of materials and appliances and securing of options based upon wholesale prices, great economies could be effected.

When business is good advertising is an opportunity. When business is bad advertising is a necessity.

BEAUTIFYING OUR COMMERCIAL CENTERS

Mr. Mullgardt's plan for a new commercial center for the city of Honolulu, is praiseworthy. What the commercial interests of that city hope to accomplish there may well be emulated by citizens of other municipalities, both here and abroad.

The modern world has been constantly preaching the need for harmonizing adjacent structures if our cities are to become attractive, but there has been no such advance action taken by any community to accomplish that result prior to Honolulu's present effort. We have there a cooperative lesson, which if carried out in its original purposes will serve as a living example to the modern world, secured through unity of purpose and intelligent effort on the part of its citizens, which no independent attempts can possibly achieve.

The architectural designs for the Commercial Center of Honolulu are distinctly typical and suggestive of the place. They constitute a true expression of the artistic and commercial spirit of Honolulu, which spirit is as clearly definable as in any one of the characterful world centers. Honolulu is truly modern and destined to grow abreast of the times by virtue of her intimate connection and relationship with the world at large, concerning which she is a most important and ineffaceable concentration port.

Notes and Comments

An Architect's Reverie—Higher Fees

Great Britain has raised the architects' fee from 5 to 6 per cent, which is the same rate fixed by the American Institute of Architects. That the British architects are not laying awake nights trying to figure out how they shall spend this extra income, is apparent from the following rather sarcastic communication of a Cape Town architect, published in the Architect and Engineer of that place, and who thinks the profession still very much underpaid:

Unlike Mr. Balfour, I have been reading the papers!

In a recent issue of the Cape Argus I read that the Royal Institute of British Architects had decided by an overwhelming majority to raise the fees from 5 per cent. to 6. I rejoiced! A perspective of unpaid bills lost the sharpness of its chiaroscuro as I imbibed the refreshing wine of this intelligence. I gloated over the prospect! Perhaps (as Reader Harris tells us), I am a unit of the lost Ten Tribes, and this intelligence woke the Hebraic instinct to life. Perhaps the news was merely a titillation of the Puritanic nerve that impels me to settle the tradesmen's accounts when they refuse to wait any longer. But—I don't think so. I think the prospect of paying for baby's frocks a little sooner and providing more of them weighted my mental balances and in a moment raised me from despair to optimism. I even had visions of the professional classes riding in motor cars while the purveyors of ladies' underclothing and the war profiteers in general—walked! After this I became pessimistic. I wondered how I should calculate my future charges. After all, 5 per cent. is a shilling in the pound, while 6 per cent. is fourteen and two fifth pence. I tried to work out the fractions to a decimal on a job costing a thousand and one pounds. I knew that on the old scale I should get fifty pounds and a bob, but the new scale demands that I should charge my long-suffering clients another ten pounds two shillings and two decimal four pence. In imagination I heard him cursing the profession still more loudly than his habit has been. My wife says that most reforms are attended by soreness on the part of someone, but that the automatic raising of the housekeeping allowance by one fifth is so obviously just that no right-minded person will, in the long run, fail to realize the beneficent tendency. The draughtsmen at the office hold similar views. Where do I come in? My tailor now charges me 50 per cent. more than he used to, and even the grocer has increased the price of butter by 40 per cent., so what I am going to do with only 20 per cent. more, I cannot tell. Of course building work costs more, but the increase appears to go into the pockets of the builders, merchants, contractors and artisans, and I get less work proportionately than I did formerly. I ascribe this to the fact that the public knows neither how hardly I earn my money, nor how little there is of it at the banker's. I think of former days. I remember the time when one used to specify something like this: " The whole of the umteen thousand feet run of balcony front shall be fitted with X.Y.Z.'s cast-iron railing, pattern number thirteen, cost x

shillings a yard run." When the order was placed the agent for X. Y. Z. called and made a presentation. Now—I have to earn my money. I have educated the clients into a dislike for X.Y.Z.'s stuff and am glad of it, but the client's gratitude is not reflected in my pass book. Speaking financially I would rather be a bold bad builder, because then everybody would pay me a commission or allow me a discount. Speaking mathematically I am of opinion that "professional fees paid are upon a scale in reverse ratio to the labor involved."

Speaking hopefully I am looking forward to spending my latter days in the Home for Indigent Architects, which will be one of the trump cards of future philanthropy.

Newspaper In-accuracy

Here is an example of newspaper accuracy(?) on matters pertaining to the building industry. It is from the Fresno Herald and, needless to say, has no foundation in fact whatsoever:

Plans are in the hands of an architect for a motion picture theatre to be erected on the corner of Jones and Market sts., San Francisco, on the site where Pragers department store now stands. Herman Wobbers has purchased the property and will build a theatre at a cost of about $3,500,000. The seating capacity will be 4000 making it the largest moving picture theatre on the Coast.

Pragers' Department store is a Class A building, designed by Mr. Sylvain Schnaittacher, and erected since the earthquake and fire.

Castles in the Air

Some of my more pessimistic readers may find comfort in the knowledge that there is at least one type of building that costs no more to build today than in years gone by.

T. SQUARE.

Twelve-Story Sacramento Building

Plans for the immediate erection of a twelve-story department store building at Sixth and K streets, Sacramento, are announced by Mr. L. F. Breuner, president and general manager of the John Breuner Company. The improvements, outside of fixtures, it is said will represent an investment of $750,000. Plans are being drawn by Mr. E. C. Hemmings, Sacramento architect.

Communications

Japanese Oak Flooring

Chicago, August 18, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—There is a matter of very grave importance to architects of the Coast—it is the invasion of Japanese oak flooring, lumber and logs imported to the Pacific Coast states. It looks now as though they will soon be shipping to New Orleans, which means the importers will shortly be seeking trade in the Eastern territory.

For the last two or three years the Japanese have not been shipping very much of their products to this country on account of the war conditions, but lately the shipments have been increased, and the time would seem to be near to make a fight for our Government to increase the taxation on Japanese oak products.

Yours respectfully,
W. L. COFFEY.

Year's Back Numbers Wanted

Fresno, Calif., Aug. 8, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—Inclosed find check for $2.50 for one year's subscription for your valuable magazine, The Architect and Engineer. Kindly send me one year of back numbers if they can be obtained, in addition to year's subscription, and I will mail check for same upon receipt of statement.

Yours truly,
A. P. WILSON,
1279 Wishon avenue,
Fresno, California.

EDITOR'S NOTE.—Any subscriber wishing to dispose of his back numbers is requested to address Mr. Wilson direct, arranging with him the amount he wishes to charge for his copies.

A Pleasant Word From a Pioneer Subscriber

August 15, 1919.

The Architect and Engineer,
San Francisco, California.

The Editor:—You have doubtless wondered why your letter of August 1, 1918, was never acknowledged. The fact is that, at the time, I was in the Service of Washington, D. C., and during that period paid little or no attention to the affairs of my office here, or to the journals and magazines that were being received.

I returned three months ago, after an absence of fifteen months and am fairly well in the harness and ready to tackle any building proposition that may chance to come my way. I was glad to find that you were sending me your paper regularly notwithstanding my absence or the fact that you never heard from me. Under no condition would I like to be without it, as it invariably contains a great deal of matter of interest to me.

If you will kindly advise me by return mail the amount of my indebtedness at this writing, I shall be glad to remit the amount promptly, and, meanwhile, beg to remain,

Very truly yours,
A. F. ROSENHEIM.

Has Three Buildings Under Way

Mr. J. F. Dunn, architect in the Phelan building, San Francisco, has prepared plans for a $20,000 auto truck shop for Mr. Geo. Caesar of the Ross Early apartments, a $30,000 residence for Mr. Robert S. Atkins, and a $28,000 apartment house for himself.

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Address all communications of Geo. M. Nelson, 810 Bank of Italy building, San Francisco.

With the Architects

Building Reports and Personal Mention of Interest to the Profession

Architects Make Plea For Justice

The Oregon Chapter, American Institute of Architects, has filed a communication with the Portland City Council asking that the city assume liability for the balance unpaid of the cost of erecting the municipal auditorium rather than to hold the bondsmen of the contractors for the deficit.

The architects call attention to the fact that the city has received full value for every dollar expended, and that the moral and human phases of the issue, as well as the legal phase, require that the city should release the bondsmen and pay the outstanding indebtedness.

The liability the city is asked to assume resulted from erection of the building by Mr. Hans Pederson, contractor, whose bid, it is said, proved considerably lower than the actual cost of the structure.

City officials say they have no exact figures as to the deficit, but some estimates place it as high as $60,000.

The communication from Mr. Alfred W. Smith, secretary of the Oregon chapter, follows:

At the regular monthly meeting of this chapter, held on the 24th ult., the matter of the bondsmen who are held for the deficit in the building of the auditorium was brought up for consideration.

After careful revision of the facts as presented to us, and our general knowledge as architects concerning the erection of this building, and after scrutinizing the accounts as rendered by the accountants, Alexander Young & Co., it was the consensus of opinion of members of this chapter that the bondsmen be released from their technical liability and the city should pay the outstanding indebtedness on the following grounds:

It seemed to the chapter that the crux of the matter is in the moral issue involved. There is no question but that the city has had value received for every dollar expended in this building and should honestly pay for same. All architects are familiar with cases where owners have found their contractors have lost money on their work and, after full investigation, have fairly and fully compensated them for value received.

This is but justice and, while architects, as a rule, insist on contractors living up to their agreements and are inclined to frown on any loose methods of estimating, entailing ultimate extra expense to the owner, still there are cases where, through circumstances over which no one individual has any control (as the world war), it would be distinctly unfair—nay, inhuman, to take advantage of men who, trying honestly to do what is right, still find themselves in danger of financial ruin.

As a rule, Portland's contractors are, when occasion arises, good losers and take their losses without complaint, but the auditorium case is almost a "life and death" matter with the parties concerned and, as architects who, above all things, should be upright judges in decisions between owner and contractor, we, as a body, feel that the human and moral as well as the legal side of this matter deserves consideration and believe that in this case the city should release the bondsmen from their present unfortunate situation.

It might further be pointed out that even the government has, in certain cases, allowed for losses where the same have been honestly and unavoidably entailed.

Personal

Captain J. Andre Fouilhoux, who has served in the field artillery section of the army since soon after war was declared upon Germany, arrived in New York August 17th, and after reaching Camp Dixon, New Jersey, he was granted a two weeks' leave. Captain Fouilhoux expects to resume his architectural practice with his associate, Mr. Morris Whitehouse, Portland, Oregon.

Mr. Chas. E. Hodges, formerly of Hodges and Mitchell, architects in the Bankers Investment building, San Francisco, has returned to the United States after serving the government in war work abroad. For the time being Mr. Hodges' address will be the Kings College apartments, 507 West 121st street, New York City.

Mr. Lewis Stone, formerly of Stone and Smith and later associated with Mr. Wright in Stockton in designing new school buildings for that city, has returned home after an absence of nearly two years in Y. M. C. A. Army Canteen work. Mr. Stone may resume his architectural practice in San Francisco.

Mr. Chas. F. Plummer has returned from a business and pleasure trip to eastern cities. Mr. Plummer was a delegate to the hotelmen's convention which was held in Chicago. He reports business conditions throughout the East excellent, although the building industry in Chicago has been tied up by a strike.

Mr. Ernest J. Kump, architect of Fresno, spent several days in San Francisco the early part of the month seeking a chief draftsman. Mr. Kump has over $500 000 worth of work on the boards and under construction.

Mr. Lloyd Rally, architect of San Francisco, is with Messrs. Coates and Traver, architects of Fresno's new $750,000 high school building.

Mr. Louis Cowles is now with Mr. W. H. Weeks, architect, 75 Post street, San Francisco.

Business Buildings

Mr. Bertram Goodhue, architect, has designed a row of business buildings to be erected on the north side of Carillo street, from State to Anacapa streets, Santa Barbara, to harmonize with the new Commercial National Bank building, to be erected at State and Carillo streets, from plans by Mr. Myron Hunt of Los Angeles. The buildings will not follow ordinary commercial lines but will set back of the street line and will have patios, corridors and covered walks. The property is owned by the Commercial National Bank, Mrs. Gardiner Hammond, the Little Town Club and the Morgas. Mr. Goodhue has purchased a home in Montecito, Santa Barbara's most fashionable suburb.

Has Designed Many Green Houses

Mr. E. L. Norberg, San Francisco and Burlingame architect, has recently completed plans, and construction is in progress, on a hot house and propagating plant at Mt. Diablo, for Mrs. W. O. Olliver. The improvements will cost $6,000. Mr. Norberg has had considerable experience designing green houses, he having drawn the plans for the MacRorie-McLaren plant in San Mateo county, and one near Tres Pinos, below Gilroy.

$65,000 Business Building

Messrs. Rousseau & Rousseau, architects in the French Bank building, San Francisco, are preparing plans for a two-story and basement Class C store and loft building for Dunn, Williams & Co. The entire building has been leased to Mr. E. Curtis, auctioneer. The site is on the south side of Sutter street, between Powell and Mason. Improvements will cost $65,000.

San Francisco Society of Architects

San Francisco Society of Architects has elected the following officers for the year 1919-20: President, Mr. W. C. Hays; vice-president, Mr. Lewis P. Hobart; secretary-treasurer, Mr. H. H. Gutterson; directors, Messrs. Geo. A. Lansburgh and John Reid, Jr. Mr. Irving F. Morrow was elected to membership.

New School Houses

Geo. C. Sellon & Co., Sacramento architects, are preparing plans for a new grammar school building at Corning, to cost $46,000, and a new school at Davis to replace the one recently destroyed by fire.

$13,000 Berkeley Residence

Mr. James W. Plachek of Berkeley has completed plans for a $13,000 home, to be built in Northbrae, Berkeley, for Mr. Roy L. Donley. There will be twelve rooms and a garage.

Department Store Building

Mr. Orville Clark, architect, of Bakersfield, has been commissioned to prepare plans for a three-story and basement reinforced concrete building for the Conklin-Brodek estate at Chester Avenue and Twentieth street, Bakersfield, to replace the one recently burned. The building will be 132x115 ft., and will have gray pressed brick facing and terra cotta trimmings. There will be one freight and two passenger elevators, heating and cooling systems, and automatic sprinklers. The cost will be more than $100,000.

Theatre Alterations

Messrs. Reid Bros., architects in the California Pacific building, San Francisco, have prepared plans for extensive alterations to the Savoy theatre, the property of Mr. H. H. Whiting. The Savoy is at 80 McAllister street, San Francisco, and has never been a very good paying proposition as a theatrical play house. It is believed that by converting it into a high class moving picture theatre it can be made to pay well on the investment, and no expense will be spared to this end.

Post Street Buildings

Mr. Wm. M. Fitzhugh, San Francisco, capitalist, who has announced his intention of building a fourteen-story office building on the northeast corner of Post and Powell streets, has purchased another lot in the same block, adjoining the Plaza Hotel, and it is said, he will improve this building the same time as he builds on the corner. Messrs. Reid Bros. are Mr. Fitzhugh's architects.

Los Angeles Church

Mr. Robert H. Orr, architect in the Van Nuys building, Los Angeles, has been commissioned to prepare plans and specifications for a new church building to be erected on Workman street, near North Broadway, for the East Side Christian Church, Los Angeles.

Prospective Bank Buildings

The First National Bank of Los Banos will erect a modern structure to replace the one recently burned. Mr. J. V. Tohcano is president of the bank. Miller & Lux will erect a new building for the Bank of Los Banos.

Mr. Hays Returns

Mr. W. C. Hays, who is in charge of Berkeley's new school programme, has returned from the East and the work of preparing plans for new school buildings under the $2,500,000 bond issue has commenced.

Sidney B. Newsom Busy

Mr. Sidney B. Newsom, architect in the Nevada Bank building, San Francisco, has completed drawings for a $35,000 house, to be erected in Piedmont for Mr. Warren H. Herald. Mr. Newsom has been commissioned to prepare plans for nine two-story dwellings to be built in Thousand Oaks, for Mr. J. M. Booth. They will cost from $6,000 to $10,000 each.

Large Hospital Planned

The California Memorial Hospital Association, 441 Monadnock building, San Francisco, has been incorporated, and will finance and operate the construction of a large sanitarium and hospital in East Oakland. Preliminary work on the first unit, which will cost $350,000, has begun. Mr. Carl Werner is architect for the buildings.

Addition to Bolt Works

Mr. Nathaniel Blaisdell, architect of San Francisco, has prepared plans for a three-story Class C brick loft building, which is to be built as an addition to the Payne Bolt Works in Howard street, San Francisco. Old buildings on the site are being wrecked. The betterments will probably cost $65,000.

Bank of Italy Building

Plans for the Bank of Italy's new building at Market and Powell streets, San Francisco, have been completed by the architects, Messrs. Bliss & Faville, and construction will start as soon as the old buildings on the site are razed. The improvements will cost in excess of $500,000.

Machine Shop and Stores

Mr. Mel. I Schwartz, who has offices in the Nevada Bank building, San Francisco, has completed plans for a $30,000 machine shop and store building, which will be erected for a client on Bush street, west of Taylor. There will be five stores. The building will have four 82 foot trusses.

Branch Post Office

A $15,000 branch post office building is to be erected at once on Haight street, near Masonic avenue, San Francisco, from plans by Mr. S. Heiman, architect, 57 Post street. Goldberg, Bowen & Co. are the owners of the property.

$150,000 High School

Messrs. Allison and Allison, Hibernian building, Los Angeles, have been commissioned to prepare plans for a group of new high school buildings at Fowler, to cost $150,000.

Engineer Ronneberg Has Much Work

Mr. T. Ronneberg, structural engineer, with offices in the Crocker building, San Francisco, has completed the engineering plans for a new building which Messrs. C. W. Dickey and Hart Wood have designed for Messrs. Castle & Cook, Honolulu. Mr. Ronneberg has also made structural plans for a reinforced concrete factory for the Hawaiian Fertilizing Company, Dickey and Wood architects. Plans have also been drawn by Mr. Ronneberg, who has taken larger offices in the Crocker building, for a three-story concrete church and hall at Durant and Telegraph avenues, Berkeley, for the Wesley M. E. church. The edifice will cost $55,000.

South City Town Hall

Only one bidder submitted a premium for the $129,000 bonds for a new City Hall and other improvements at South San Francisco. The bid was rejected. This will delay advertising for bids for the construction of the new municipal building, from plans by Messrs. Werner and Coffey, architects in the Humboldt Bank building, San Francisco.

Thousand Oaks School

Mr. W. C. Hays has completed plans for the first of Berkeley's new school buildings—the Thousand Oaks school—and contractors are figuring on the work. Hollow tile walls are to be used and the building will combine class rooms, auditorium and branch library. The appropriation is $65,000.

Attractive Bungalows

Mr. E. E. Young, 251 Kearny street, San Francisco, has taken figures for the construction of nine frame and plaster bungalows of five rooms and bath each, with hardwood floors and all modern conveniences, to be erected on Geary street, between 44th and 45th avenues, San Francisco.

Dutch-Colonial Home

Plans are being prepared by Mr. E. C. Hemmings of Sacramento, and Mr. Charles Dean, associate, for a $10,000 home for Mr. J. F. Lubin of the Weinstock-Lubin Company, of Sacramento. The design will be Dutch-Colonial.

To Complete Bank Plans

Messrs. Weeks and Day, Phelan building, San Francisco, have been instructed to complete the working drawings for the proposed eighteen story Class A bank and office building for the Capitol National bank at Sacramento.

PROSPECTS

This department is intended to assist architects and engineers in obtaining a line on new work. So far as known, no plans have been prepared for any of the work mentioned, at least not at the time of writing.—Editor.

CANNERY — MODESTO.—A reinforced concrete warehouse to cost approximately $40,000 will be built at Ninth and "C" streets, Modesto, by the Pratt-Lowe Canning Company, whose main plant is at Santa Clara.

DEPARTMENT STORE — BAKERSFIELD.—According to Mr. Ira Homer, manager of Hochheimer & Co., whose department store at Bakersfield was badly damaged by fire, a new building will be constructed as soon as details can be worked out. A fireproof structure is planned.

HOUSING SCHEME—NAPA.—A mass meeting of Napa citizens was held, when steps were taken to raise $100,000 to build a group of cottages and bungalows to relieve the shortage of houses.

BANK BUILDING—SAN FRANCISCO.—The San Francisco Chinese Bank plans to build a branch institution at Stockton. A lot has been secured near the Hotel Lincoln, that city.

LABOR TEMPLE—MARTINEZ.—The Central Labor Council of Martinez is planning to erect a new building there. Several sites are under consideration.

APARTMENT HOUSE—SAN FRANCISCO.—Mr. John Rosenfeld, of John Rosenfeld & Son, Merchants Exchange building, San Francisco, has purchased the lot on the north line of Sutter street, between Taylor and Mason streets, adjoining the Woman's Athletic Club, as a site for a new apartment house.

HOSPITAL—PASADENA.—A six-story addition to the Pasadena Hospital will soon be built at a cost of $500,000. A committee headed by Mr. David Blankenhorn will select an architect to prepare plans. Other members of the committee are Mr. Theodore Coleman, Judge G. A. Gibbs, Mrs. George E. Hale, Dr. Chas. D. Lockwood, Mr. John McWilliams, and Mr. John S. Cravens.

SCHOOL—MARTINEZ.—Bonds amounting to $90,000 have been voted for a new school building here.

BANK BUILDING—ANTIOCH.—The Antioch bank plans the erection of a new building.

AUDITORIUM—EUREKA.—An election for bonding the city for $275,000 for the erection of an auditorium, swimming tank and other improvements is to be held.

HOTEL—ORLAND.—The Orland Chamber of Commerce has passed a resolution indorsing the proposition of Mr. Louis Von Tagen of San Francisco to finance a new hotel. Mr. Von Tagen proposes to assume the entire responsibility of securing the necessary funds, amounting to $60,000.

100 FLATS — SACRAMENTO.—The Libby, McNeil & Libby Company is planning to erect 100 more flats for next season on its tract of land across from the plant.

SWIMMING POOL — VISALIA.—The City Trustees are considering the calling of a bond election to secure funds with which to finance construction of a municipal swimming pool.

BANK BUILDING — HEALDSBURG.— The Bank of Healdsburg will erect a $75,000 building from plans by Mr. Frederick H. Meyer.

Extensions Planned to Canneries

Hunt Bros., 112 Market street, San Francisco, who operate a string of canneries in this state, including one at San Jose and one at Exeter, are planning to overhaul them and make needed additions. Mr. Washington Miller, architect in the Lachman building, San Francisco, will be in charge of the work.

Publicity Promised on State Highways

The California Highway Commission recently announced that it will hereafter issue letters to the press reporting the important business transacted by the commission. The first letter sent out by Secretary W. R. Ellis covers the proceedings of the commission and road developments for the month of July.

Systematic publicity on state highway work will be welcomed by the public as well as by those intimately connected with or interested in it. The Highway Commission has been practically the only state service body which has not heretofore had a publicity bureau. If it had been adopted sooner a great deal of criticism which has been aimed at the commission might have been averted.

Architect Sues for Commission

Mr. Ralph P. Morrell, architect of Stockton, who was employed by Mr. W. H. Bennett to plan and supervise the construction of the Bennett apartments, on Hunter and Magnolia streets, has brought suit against the owner to recover a balance of $2230.91 claimed under a contract made for his services.

Mr. Morrell alleges in his complaint that he had a contract for 5 per cent of the cost of the building as his compensation and prays judgment for that sum, asking that it be adjudged a lien on the property. The complaint gives the total cost of the building as $98,618.31, and the plaintiff's percentage is figured at $4930.91, of which he acknowledges receipt of $2700, leaving due $2230.91, the amount sued for.

$150,000 Milk Plant

Mr. E. C. Hemmings, architect of Sacramento, has prepared plans for a milk plant, including casine and power house, to be built at Los Banos for the Associated Milk Producers of San Francisco. The estimated cost of the improvements is $150,000.

$100,000 High School

Mr. Ralph Wyckoff, who is designing a new high school building for Salinas, has been commissioned to prepare plans for the new $100,000 union high school at Monterey. The bonds have been voted and sold.

Back Copies Wanted

Mr. J. C. Cebrian, 1801 Octavia street, San Francisco, will pay 50 cents a copy for The Architect and Engineer of the dates of January 1918 and January 1919. Mr. Cebrian's phone number is Fillmore 333.

Industrial Plant

Messrs. DeYoung & Roald, architects, Spalding Building, Portland, have been selected as architects for a large industrial plant to be built in Eastern Oregon for the American Diato Co.

Hotel for Yosemite Valley

A two-story frame tourist hotel, 200 bungalows, lodge building, hydro-electric plant, ice plant, garage, group of store buildings and a warehouse will be constructed in Yosemite National Park by the Yosemite National Park Co., Mr. A. B. C. Dohrmann, of Nathan-Dohrmann Co., president. Messrs. Miller & Warnecke, Perry building, Oakland, and Call-Post building, San Francisco, are preparing the plans. Gutleben Bros., Call-Post building, San Francisco, will be the contractors in charge of the work. Construction work will be started the first of the year, but most of the materials will be purchased and sent into the park before that time. The Grissley Hotel, to be located at Yosemite Falls, will be two stories, with a frontage of 700 feet, and will contain 150 rooms. It will be equipped with an automatic fire sprinkling system. Estimated cost, $600 000. Back of the hotel will be 200 bungalows, a stone garage for 150 machines, concrete swimming pools and tennis courts. At Soda Springs a rustic lodge to accommodate 400 persons will be erected at a cost of $100,000; also a group of stores with central steam heating plant, a 30-ton ice plant and a large warehouse.

Brentwood School

Bids will be opened October 4th for the construction of a reinforced concrete school building at Brentwood from plans by Mr. J. C. Narbitt, architect of Richmond. Bonds for $60,000 have been voted but there is $20,000 additional available. The auditorium will be two stories and will accommodate 400 pupils. There will be ten class rooms.

Mr. Narbitt has under construction in Richmond a $30,000 store and hotel building and plans are being prepared by him for a $7500 brick store building for Mr. E. Froebel and an $8000 lodge hall in Albany.

Richmond Civic Betterments

Mr. Charles H. Cheney, city planning expert of San Francisco, Portland and Alameda, has begun a survey of the city of Richmond with a view to advising the community council just what can be done in the way of parks and playgrounds.

On Bath Night Only

Engineer: What size water system do you want?

Councilman Fogarty: Four thousand gallons a day on week days and Sundays and ten thousand gallons on Saturday nights.—Exchange.

New Creamery Planned

The San Joaquin Valley Milk Producers' Association, Cory building, Fresno, has been incorporated and has merged practically all the creameries in the San Joaquin Valley from Bakersfield to Merced. A big plant is to be erected by the company at Tulare.

Builders' Day to Be Annual Event

BUILDERS' day in the Big Basin, Santa Cruz mountains, September 6th, proved a greater success than its originators had hoped for. Due largely to Mr. Pratt's splendid publicity work, it seemed as if everybody in the building line turned out to help swell the attendance, which was variously estimated at from 1000 to 3000. So pleased was everybody with the celebration that it was the unanimous verdict of the gathering to make it an annual event and efforts will be made to bring together next year all the building interests of the entire state.

The visitors included many of the largest builders, contractors, architects and other representatives of the industries in the West. Organizations attending were the Builders' Exchange of San Francisco, Building Industries' Association of San Francisco, San Francisco Architectural Club, Team and Auto Truck Association, General Contractors' Association of Oakland, Builders' Exchange of Sacramento, Builders Exchange of San Jose, Masons and Builders' Association of San Francisco.

In keeping with the idea of "Builders' Day in the Big Basin," as originated by Mr. Clarence F. Pratt, president of the Pratt Building Material Company of San Francisco, every builder present pledged his undivided and continued support of the California Redwood Park and the perpetuation of the forest play "Soul of Sequoia."

State Senator William Scott offered a resolution to be presented to Governor Stephens asking him and the park commission to take official steps to perpetuate the forest play in the Big Basin.

The resolution was endorsed by the vast gathering with a volume of sound which could probably be heard in all parts of the basin.

Saturday afternoon was devoted to games in the park and to getting located in camp. Just prior to the opening of the play the builders marched from their camp to the hillside before the stage. Immediately following the play the builders invited everyone in Big Basin to join with them in a program of fun in the circle around the huge camp fire.

From that time until after 2 o'clock in the morning the visitors kept the camp in a constant uproar of laughter, member after member contributing his share to the general enjoyment.

More than $1200 worth of prizes, ranging from a $200 silver tea set of special design, to a dozen fly-swatters, were given out to victors in the games and contests.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

Protecting Piles from Marine Woodborers*

By THOMAS MONROE, in Highway Magazine

PIER builders from Maine to Florida, on the Gulf of Mexico, and from California to Alaska face the problem of defeating the ravages of the Teredo, or shipworm, one of the most destructive of the marine woodborers. These tiny animals of the sea, attack and completely riddle all wooden structures, no matter of what hardness, which remain below the high-tide mark for any length of time.

The Teredo is a long, worm-like creature. At its "head" is a hard, boring-shell which burrows into the wood, and also serves to protect the vital organs of the animal, as is illustrated on this page, (Fig. 1.) The Teredo lays eggs, sometimes a million in number at one time, and as soon as the little ones are hatched, they swim to a piece of wood and attach themselves.

When the Teredo enters a piece of wood, it builds a tunnel wall of shell as a protection, and as it continues to bore deeper, the shell is formed about its body until a calcareous lining is built the entire length of the bore. This shell does not reinforce the wood, however, as it is very thin and fragile. Often these borings replace fifty per cent of the wood attacked, and a single one may be more than an inch in width, (Fig. 2).

Perhaps on the North Pacific Coast the destructive action of the Teredo is most felt because the animal seems to thrive in that locality. It is not surprising then that from the coast of Oregon should come a ray of hope to the constructionists who have for years vainly looked for a way to combat the ravages of the Teredo.

The piers of the Bay City Fish & Storage Company, at Bay City, Oregon, had for years suffered from the attacks of the Teredo. The supports of the wharves and warehouses, owned by this company, that extended below the high-tide mark offered a fine target for the marine woodborers and it was constantly necessary to replace piers, and always face the danger of a sudden collapse of the super-structure.

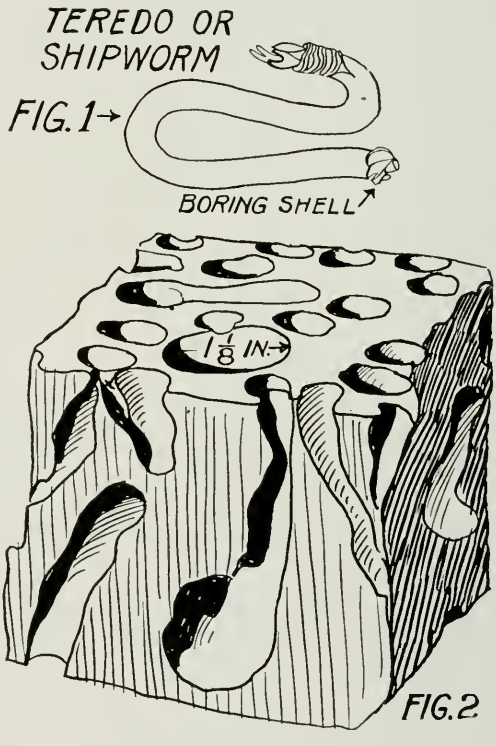


Fig. 1 shows a Teredo, the most destructive of the marine woodborers. Fig. 2 illustrates how wood is riddled by this pest.

It had been found that concrete piles could not be made to stand the effect of the sea water, and, although they of course resisted the attacks of the Teredo, they soon deteriorated.

The Bay City Fish & Storage Company recently concluded that wooden piles, with a protective casing of some kind would solve the problem and accordingly hit upon galvanized, corrugated Armco Iron Culvert Pipe for the purpose. The

*The destruction of wooden piling by the Teredo, or shipworm, and the failure of other materials through the action of sea water, caused pier builders along the Pacific Coast to adopt casings of Armco Iron to protect pier supports.

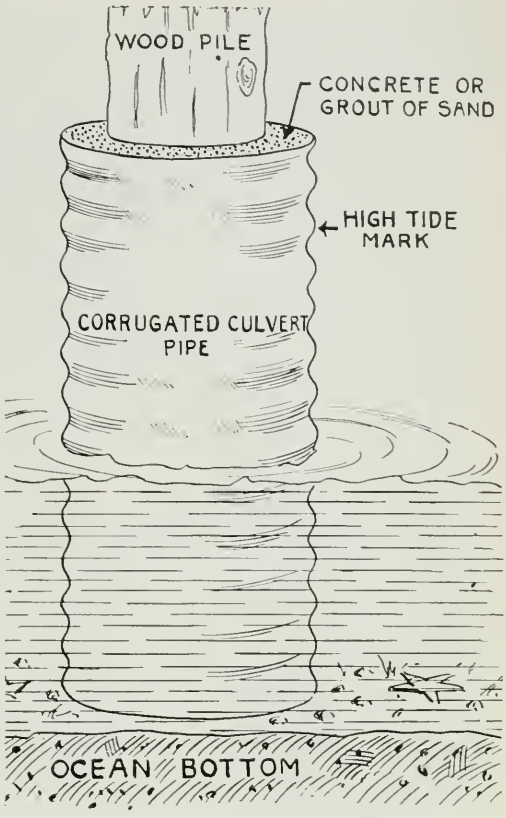
resistance of pure iron to the corrosive action induced by contact with sea water is well known, and therefore, Armco, which tests 99.84 pure was selected.

A section of pipe was slipped over each pile, as is shown in the photograph on this page. It will be noted that where the pipe does not extend above the high-tide mark, the Teredo has attacked the pile. This, of course, could have been obviated by ascertaining the exact high-tide mark on the pile before installing the pipe.

In order to effect a better installation then, it has been suggested that the top of the protecting casing of pure iron pipe be made to extend well above the high-tide mark, as is shown on this page in the accompanying drawing, and that the pipe be three or four inches larger than the pile it protects so that concrete or a grout of sand can be filled in and thoroughly tamped. This would make a permanent rust-resisting protection, and exclude the Teredo.

Those who are familiar with the speed and thoroughness with which the Teredo works will at once be interested in this method. That some protection is necessary is obvious from the conclusive evidence presented by various authorities on the subject of marine borers. Those who scout the menace of the Teredo, and similar water pests, should read the chapter devoted to "Failure of Wood Because of Animal Life," in which marine forms are discussed, in Charles Henry Snow's book entitled "Wood and Other Organic Structural Materials."

It is a fact that six-inch piles have been destroyed in six weeks, the Teredo boring at a rate of one inch a week. Government Engineers have reported the destruction of piles in Mobile Bay in less than one hundred days after installation. Because of the failure of bridge piles due to marine borers, a freight train on a Southern railway recently crashed through a trestle that had been standing about ten months and had been frequently inspected.



How wooden piles can be protected from the attacks of the Teredo by means of Armco Iron Casings.

Armco Iron Corrugated Culvert Pipe used by the Bay City (Oregon) Fish and Storage Co., to protect its piers from the destructive Teredo.

Mr. White Gives Engineers a Treat

At the regular bi-monthly meeting of the Association held at the Engineers' Club on August 19, Mr. Frank G. White, chief engineer for the State Board of Harbor Commissioners, read a paper on "San Francisco's Waterfront". An informal discussion was also held of the proposed bill for reorganizing the present Interior Department of Federal Government to include all the engineering work done by the Government, with the exception of the direct army engineering work, and to name the reorganized department, the Department of Public Works. The meeting endorsed the bill.

California State Council of Engineers

LACK of a central engineering agency for the different sections of California, when an effort was made during the last session of the State legislature to reach an agreement on an engineers' license law, has served to crystallize action on the formation of a Joint Council of Engineering Societies of California, to further "the common interest of members of the engineering professions and for the rendering of public service as opportunity offers." A joint committee of seven Los Angeles societies and a joint council of five San Francisco societies already exist and have been functioning. For state problems, however, they soon found their organizations were insufficient, and the San Francisco council proceeded to formulate plans for a state-wide council built practically on the same basis as the two local organizations. The proposal, well worked out in general and ready for the final details, has been sent out for comment and criticism by Mr. N. A. Bowers, secretary of the joint council, to nine societies in San Francisco, six in Los Angeles, one in Sacramento and one in San Diego.

The keynote is in the statement of the formulating committee, consisting of Messrs. C. D. Marx, Edward Higgins, B. S. Drake, C. E. Rogers and E. C. Hutchison, to the effect that "if engineers are to use their influence to advantage through a state joint council, that body must be representative and it must have some authority." In the proposal it is suggested that representation be restricted to professional organizations, excluding those formed for social purposes; that each society have one representative for each 100 members, with votes equal to the number of active members; that five officers elected at the one annual meeting constitute an executive committee; that an expression of opinion by mail from the membership of each society as a whole on all important questions is to be obtained whenever feasible, representatives being expected to vote the sentiment of their constituency except on minor matters; that expenses of the council, including traveling expenses, are to be apportioned among all societies on the basis of their active membership. Rather than work out representation at large the societies are urged to enroll engineers belonging to no local.

The San Francisco joint council does not consider itself or the Los Angeles joint committee eligible, but it is simply setting the stage and providing the medium until the first organization meeting. In this respect the plan is at slight variance with that proposed by the development committee of the American Society of Civil Engineers, which suggests that the state councils be composed of representatives from the local affiliations, the affiliations to be made up of branches of the national technical societies and the local technical societies. No provision seems to have been made for state societies either in the California proposal or in the development committee plan, whereas in Illinois, the Middle West and West the state societies have followed legislation much more consistently year in and year out than the local organizations.

Colorado Engineering Council Working

Under the name of Colorado Engineering Council, eight state and local technical societies have organized to co-ordinate their work, to promote the welfare and professional standing of their members and to foster a more general recognition of the engineer in civic matters. Each organization has one delegate and an alternate. Two years is the term of office. A representative failing to attend three successive meetings without being excused by the president forfeits his seat. Regular sessions are scheduled at least once a month. The dues are $5 per year for each organization.

One of the first pieces of work was an examination of the license law which was passed by the last legislature, largely through the efforts of the Colorado So-

HARDWOOD HEADQUARTERS
ASH-BASSWOOD-BIRCH
AROMATIC RED CEDAR
COTTONWOOD-ELM-HOLLY
SOUTHERN RED GUM
HICKORY-LAUREL-MAPLE
OREGON MAPLE-PLAIN OAK
- QUARTERED OAK -
WYBROCK BENDING OAK
POPLAR--WALNUT

BOXWOOD-EBONY-IRONBARK
JENISERO-KOA-SPANISH CEDAR
LIGNUMVITAE-MAHOGANY
ROSEWOOD-TEAK-RED BEAN
SPOTTED GUM-CIRCASSIAN WALNUT
LUMBER--TIMBER
HARDWOOD FLOORING
WYBRO VENEERED PANELS
DOWELS-TREENAILS-VENEERS
WHITE BROTHERS
FIFTH and BRANNAN STREETS SAN FRANCISCO, CAL.

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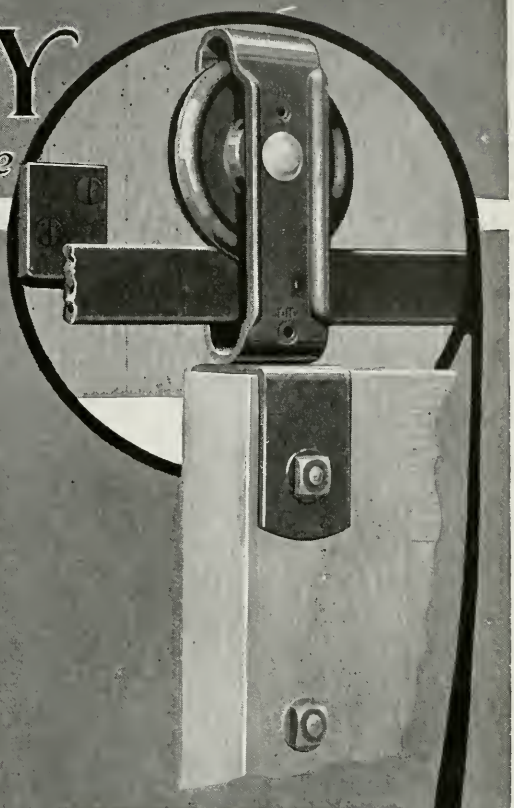
Garage Hardware for ROLLING DOORS



SHOULD the City Ordinance prohibit the use of outside swinging doors — your client will want Stanley Works' quality in ROLLING DOOR HARDWARE.

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¶ With the combination of doors to meet all requirements operating either right or left hand for entrances, six, eight, ten and twelve feet wide.

A catalog showing the details of this hardware sent on request.

The Stanley Works
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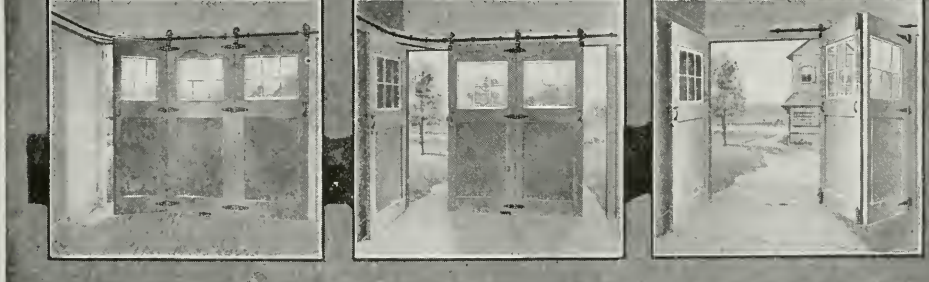
THE HANGER
Strength and ease of operation are the features of this hanger No. 2525.

It Rolls on Rollers

In Three Sets



ciety of Engineers, an organization of about 250 members having business and welfare aims. The council was organized too late to do anything with the bill before it became a law, although some of the mining engineers objected quite strenuously to it. Examination by the council into the details, however, disclosed that the law is not bad, and it was decided that, for the time being at least, no opposition to it should be launched.

The officers of the council are as follows: President, Arthur Ridgway; vice-president, L. G. Carpenter; secretary-treasurer, Robert J. Grant, Interstate Trust Building, Denver, Colo.

United Engineering Society Pays Tribute to Late Andrew Carnegie

Mr. Andrew Carnegie's death, August 11, 1919, at Lenox, Mass., brought to its close a career which greatly advanced all the engineering arts and sciences. By the introduction into the United States of the Bessemer process for the production of steel and by the establishment and development of steel plants, which became the greatest in the world, he made available for engineers the most useful modern material for engineering construction. In the successful conduct of many industrial enterprises, he amassed great wealth, the possession of which he came to regard with deep seriousness as a public trusteeship. He devoted himself to the distribution of large portions of his fortune to projects for the benefit of mankind. He distributed his wealth not only in many directions, but also with the exercise of great wisdom based on careful investigation. His munificence provided large funds for the building of a home for the great national engineering societies and many associate societies. He was an honorary member of the American Institute of Mining and Metallurgical Engineers and American Society of Mechanical Engineers. He was personally known and loved by many engineers. In view of these facts, be it

Resolved, That the American Societies of Civil, Mining, Metallurgical, Mechanical and Electrical Engineers, the United Engineering Society and the Engineers' Club, herein express to the family of Mr. Carnegie and record their sincere appreciation of the great contributions of Andrew Carnegie to the advancement of engineering, and of his friendly assistance in making possible beautiful homes for the Engineering Societies and the Engineers' Club, thus fostering the spirit of unity in the profession.

Moves Los Angeles Office

The Edward R. Bacon Co., distributors of contractors' machinery and hauling equipment, has moved its offices from 1047 South Olive street to Room 414, Central building, Los Angeles. The company will handle the business for Southern California and probably a larger territory from its new office.

Dr. Newell Addresses Engineers' Club

DR. F. H. Newell, president of the American Association of Engineers, addressed the Engineers' Club of San Francisco at a luncheon meeting on August 26, on the subject of "The Engineer in Modern Life; His Ideas and Ideals". Dr. Newell alluded to the importance of the work of the engineer, and the contrast afforded to this importance by the low average compensation and also the lack of public recognition, as evidenced by the small number of engineers in public life. The engineer is considered by the general public to be all right as a hired man but when it comes to actual responsible positions even though they be directly connected with engineering work, such as commissioner of public works of a city or member of a public-utility commission, some other kind of a man is appointed. This lack of adequate compensation or of recognition is mainly because engineers have not made themselves felt because of lack of organization. Many engineers belong to no engineering society at all, and there is very little real effective cooperation between the engineering societies as at present organized.

Dr. Newell then spoke of the beginning of the American Association of Engineers in a small local organization in Chicago, and of the Association's rapid growth, which is now at the rate of about 1000 new members per month. He also mentioned the work done by the Association, particularly in the matter of compensation and employment, but also including other matters of special interest to the engineer in his relations to the general public.

Engineers Inspect Water Front

The members of the San Francisco Association of Members of the American Society of Civil Engineers made an inspection trip along the San Francisco waterfront on the afternoon of August 16, a launch being placed at their disposal by the State Board of Harbor Commissioners. Stops were made enroute to inspect the condition of the concrete piers, some of which have been exposed to the action of sea-water for as long a period as eight years. No evidences of disintegration could be observed. Another point of interest was the undamaged condition of the untreated wooden piers protected by concrete cylinders. A stop was also made at Hunters Point to see the massive concrete drydock recently completed there, also the pumping-station equipped with electrically driven centrifugal pumps for pumping out the dock.

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By using Atlas-White for the finish coat the most beautiful color tones are secured. These may follow the desire for pure white or, by the addition of color aggregates—screenings of yellow, buff or pink marbles; warm gray or light green granites and yellow or red gravels and sands, etc.—any desired color scheme may be attained without the mixing in of pigments or other coloring matter.

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Hard, weatherproof, durable stone—in an infinite variety of colors and textures is produced with Atlas-White Cement—with a minimum labor of shaping, whether simply moulded or richly ornamented.

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Atlas-White is a true Portland Cement of the highest quality, testing even higher than the requirements of standard specifications for Portland Cement. It is pure white in color and absolutely non-staining.

Literature

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High Prices for Engineering Materials in France.

Representative retail prices of building material, tools, hardware, etc., in France, which are the bases of settlement on which many of the claims filed with the Department of Rents, Requisitions and Claims are being paid, indicate a higher scale than exists in this country.

REPRESENTATIVE PRICES FOR ENGINEERING MATERIALS IN FRANCE.

Lumber and construction timber, pine and fir.....	per 1000	$120.00
Oak flooring	per 1000	250.00
Red brick, common.....	per 1000	38.00
Fire-brick	per 1000	79.00
Roofing tile	per 1000	67.00
Pitch	per 100 lb.	14.00
Cement tile, 6-in. diameter.	per lin. ft.	.15
Nails and spikes.....	per pound	.27
Bridge augers	each	1.00
Small stone hammers.....	each	.90
Window glass, double str...	per sq. ft.	.57
House paint	per 100 lb.	45.00
Sand, at pit	per cu. yd.	.55
Gravel, at pit	per cu. yd.	.80
Crushed stone, at quarry..	per cu. yd.	1.20
Electric light wire.....	per lin. ft.	.023
Electric lamp cord.....	per lin. ft.	.054
Leather belting, 5½ in. wide	per lin. ft.	1.30
Leather belting, 8 in. wide.	per lin. ft.	1.95
Castings, milled, weight 10 lb. each	per pound	.16
Brass Bushings	per pound	.87

Only for sand, gravel and crushed stone, with which France is well supplied almost everywhere, does the price approach levels in the United States. The prices have been converted into American units, with exchange assumed at 5.70 francs to the dollar.

Pier Settles

A section of the reinforced concrete municipal pier at Santa Monica, which was built seven or eight years ago, settled suddenly a few weeks ago while crowds were being transferred to launches enroute to warships lying off shore. The settlement is reported to be as much as ten or twelve inches. Three engineers have been engaged by the city of Los Angeles to examine the phenomena, determine the cause and report to the city commissioners. Meanwhile the outer end of the pier has been closed to the public.

Union Wages for City Draftsmen

The San Francisco Board of Public Works has approved the recommendation of City Engineer M. M. O'Shaughnessy that the union wage scale be granted to draftsmen, surveyors, inspectors and others in the city engineer's department who belong to the newly organized engineer's union.

One hundred men in the city engineer's department are affected. The additional appropriation to meet salary increases will amount to $77,000 a year.

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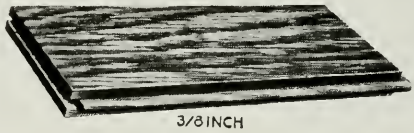
(For Everlasting Economy)



In Remodeling

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Due to its small consumption of lumber and light shipping weight it is able to produce probably a greater *improvement* for the money than any other one item.

OAK FLOORING
MANUFACTURERS' ASSOCIATION
1016 ASHLAND BLOCK: CHICAGO:

Under the new scale assistant engineers are to receive a minimum of $250 a month. Their present wage varies from $125 to $325. Other changes are:

Inspectors $8 a day minimum; now $6.

Field assistants, $175 a month minimum; now $125.

Surveyors, $225 a month minimum; now $165.

Draftsmen $200 a month minimum; now $165.

American Association of Engineers

At a meeting of Los Angeles chapter of the American Association of Engineers in August, permanent organization was effected and plans were gotten under way for an installation meeting.

The temporary officers chosen in June have been endorsed for permanent officers as follows: Mr. E. G. Shiebley of Riverside, president; Mr. A. L. Harris, Central Building, Los Angeles, secretary; Mr. Everett H. Merrill of Los Angeles, treasurer.

Discussions of various questions propounded by the national association, such as compensation of railroad engineers and the good roads bill now before congress, occupied considerable time during the business meeting following the banquet. The session was presided over by President Shiebley, with Mr. John M. Kemmerer acting as secretary in the absence of Secretary Harris.

Higher Wages for Draftsmen

Readjustment of wages by the State Civil Service Commission and the State Board of Control for the benefit of employes of the Architectural Division of the State Department of Engineering is expected to forestall expressed intentions of engineers, draftsmen and other employes of the Engineering Department to organize a labor union for the purpose of securing wage advances.

For some time complaints have been growing regarding the wages paid. Increases ranging between 12 and 15 per cent have been provided by the Board of Control and the Civil Service Commission in the readjustment of the pay roll. This action gives the employes affected a minimum wage scale of $125 and a maximum of $300 per month. Under the old schedule the maximum was $250.

A Reinforced Concrete Highway

A steel reinforced concrete road laid on a thick crushed rock base is to be built near Oroville for a distance of six and a half miles through the rice belt. Through this particular belt the great quantity of water, the adobe soil and the inability to drain, makes road building most difficult, with the result that a steel reinforced concrete highway surface has been decided upon.

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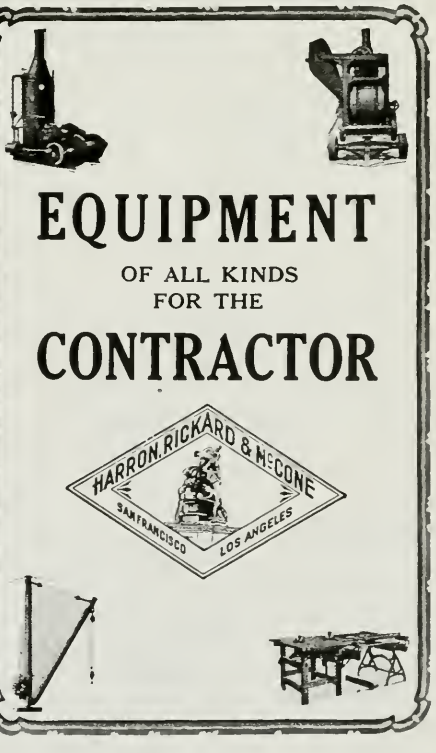

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RESERVOIRS
TUNNELS
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The Contractor's Salary as an Overhead Charge*

By J. F. Lidral.

THERE are many among you who have been brought up on construction work since boyhood. There are others among you who have perhaps gone to school to more scientifically equip yourselves for your life's work. In either case you have devoted long years of experience and hard work to place yourselves in a position to be able to accomplish something which the ordinary individual cannot do. You have all the marks of a profession if you will demand from the world that you are professional men.

When a calling is placed in the rank of a profession, the world recognizes that the individual engaged therein has been qualified by virtue of long study and experience and classes him as an expert who is capable of understanding and undertaking difficult problems. With this recognition comes also the inclination to be willing to compensate him in direct proportion and to the extent that he is able to save time and money for the man who engages him.

You have endeavored to build up your organization and working force. You have saved your money and paid your bills in an attempt to build up your credit standing. Why? So that you are able to perform work better and quicker and buy material cheaper than the outsider or the ordinary layman.

Now, laying aside for the moment the fact that you risk your money and reputation in your business, how much in the nature of a salary are you worth to your firm? Are you working simply for the love of work or are you worth a salary of $100, $200 or $1,000? You hire a foreman and you pay him perhaps $10 a day or approximately $250 a month. This foreman is working for you because he lacks something you possess. Either he does not possess the necessary knowledge to run his own business or his credit is gone or he possesses too much knowledge, knowing that he would be minus his $250 if he figured his worth as do some contractors. The foreman works his 8 hours per day and his troubles end.

There are very few of you who limit one week's work to a minimum of 40 hours. It is more likely that you are on the job at 7:30 a. m. and spend the time until 4:30 p. m. racing like mad to keep it going. Then you go to the office until 6 o'clock trying to catch up with what you missed during the day. In the evening you have an engagement, or some party wishes

* Abstract of an address presented July 1, before the Seattle Master Builders' Association, Seattle, Washington.

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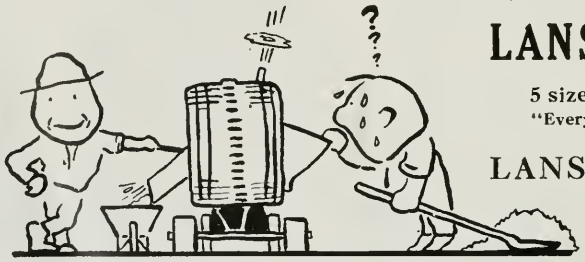

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a little free information about a building they never intend to erect, or your car needs adjusting after a hard day's abuse hauling nails and wheelbarrows or you may go back to the office to work on the books to worry about how you are coming out on that job you took too low. Even Saturdays and Sundays are not exempt for most of you, and I'll wager that the majority of you neglect your families almost entirely. It is safe to assume that you put in more than double the time your foreman does. Is it not logical that each and every one of you is worth at least $500 to your firm? This item is just as much an overhead as is your office rent, interest on the money invested and other items. In other words, to the overhead of every firm should be added a salary for each individual engaged therein.

Some of you may not agree with me perhaps and will make the declaration that a man's compensation should come out of the profit. The definition of business is an undertaking to which risk is attached and which is attempted in order to result in a profit. Your overhead does not and cannot include a probable loss on any job. You lose money as all of you have done at different times. Your profit then is solely the necessary compensation over and above everything else to warrant your assuming the risk involved. In other words it is a bonus over and above your overhead and labor which is rightfully yours for the assumption of the undertaking.

It may be well at this point to make comment on some of the work going on this year. There is at present a noticeable shortage of carpenters and bricklayers. All are employed, indicating that there is considerable work underway. Go along any street of this or other large cities and you will see evidence of considerable building activity. How many of you contractors have a job at present that you are satisfied is bringing you all the returns to which you are entitled. There seems to be plenty, and still most of you are marking time waiting for more work to turn up at better prices.

We will take a concrete example: The 1-story mill type garages, so many of which are under construction at the present time, with brick walls, concrete floor, tar and gravel roof on wood trusses and cold water paint on the interior. This is the simplest sort of a job to figure and yet our figures vary 100 per cent. Why? There are no slave drivers among us nowadays. The workmen will give just about the same amount of work to all of us. Your credit, let us assume, is equally good or at most we cannot underbuy each other more than 10 per cent. There are two reasons. First, you are afraid that the other fellow is going to grab it and you cannot get over the idea that you may make a little spending money if all goes well and you are lucky. Second, you have been influenced by owners and real

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Corner detail of Southern Pacific Depot at Berkeley, California. J. A. Cristie, Architect.

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estate operators who have convinced you that such buildings have always been and are now being built for 6½ cents a cubic foot. It can't be done. You can't put in brickwork for much less than $40 and 8-in. concrete, including form work, much under $18, so what is the use and why worry about the cheap owners and architects who convince some uninformed mortal to pack their troubles. I plead with you that in these days of plenty for all of us that you figure to come out on top, allowing for your overhead, a salary for yourself and a fair profit.

In closing, I would like to ask each one of you this question: What do you consider you are worth to the business and professional world standing apart as one who is an expert? Not until you take enough personal pride in yourself and place a fair price on your labor will the world wake up to the fact that you deserve recognition as an expert and are entitled to a fair compensation for the time, money, experience, and energy which you have devoted to your life's work.

Sierra Electric Incorporates

The Sierra Electric Company, formerly located in the Call-Post building, San Francisco, has moved to larger quarters at 515 Market street, where there is ample space for stock and display rooms. The company has incorporated with Mr. H. H. Van Luren, president, and Mr. F. I. DuFranc, sales manager. The company is manufacturers' agents for the following:

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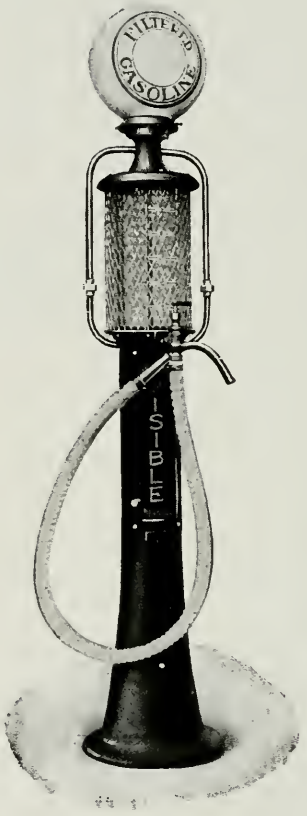
Dougan Electric Mfg. Co.—Bell ringing and small transformers; meters.
Chicago Solder Company—Rosin and acid core solder.
Chas. F. Hartung—Manufacturer of hospital signal systems.

Architects Form New Association

A new society of architects has been organized in New York, known as the New York State Association of Architects. It will be independent of existing organizations. All architects registered in the state of New York and all architects whose standing in practice is approved by the board of directors of the association, are eligible to membership. All architectural draftsmen, working in the offices of architects who are members of, or eligible to membership in the association, are eligible to junior membership. Mr. Ornan H. Waltz of Ithaca, is president, and Mr. Walter B. Frank of Utica, secretary of the association.



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Architects and Builders Form New Organization

Representative architects, contractors, builders and leaders of organized labor engaged in the building industry in San Francisco have adopted a code of ethics and trade rules for the government of the building business.

Resolutions were unanimously adopted embodying the following principles:

1. All bids should be opened in public.
2. Bids should not be submitted both as a whole and in segregated form at the same time.
3. General contractors should not sublet work to the extent he becomes merely a broker.
4. Peddling of bids should be stopped.
5. Contractors should not furnish plans for heating, electrical or mechanical equipment or layouts on which bids are to be submitted by other contractors.
6. Architects should determine the competency of all bidders in advance of taking bids and be prepared to give the work to the lowest bidder.
7. Architects should not act as contractors.
8. That a joint arbitration committee having proportional representation from all interested organizations in the building business with authority from their organizations be formed to settle all disputes.

The following officers have been elected:

Mr. William Mooser, president; Mr. F. C. MacDonald, secretary; Mr. Ralph McLeran, first vice-president; Mr. Emil Hogberg, second vice-president; Mr. David Zelinsky, third vice-president; Mr. Frank Klimm, treasurer.

At the meeting were representatives from the following organizations:

San Francisco Chapter, A. I. A., Builders' Exchange, General Contractors' Association, Masons and Builders' Association, Master Plasterers' Association, Master Painters' Association, Master Plumbers' Association, Electrical Contractors and Dealers' Association, Team and Auto Truck Association of Building Trades Association of San Francisco, and other associations.

Little Theatre for Los Angeles

Miss Alice Barnsdall, known in New York, the middle west and California through her support of the "Little Theatre" movement and of the better class of drama, has announced that she will construct a playhouse in Los Angeles to cost $200,000.

Miss Barnsdall has left for a tour of the Orient and while in Tokio will consult with Mr. Frank Lloyd Wright, the Chicago architect, in regard to plans for the proposed theatre. Mr. Wright is engaged in building the Imperial Tokio hotel in Tokio.

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Trade Names Will Be Forgotten

The members of the Associated Metal Lath Manufacturers have united on a cooperative campaign to promote a more extensive use of metal lath for fire resistive construction.

The climax of this campaign will be Metal Lath Week, October 6 to 11, 1919, which is coincident with Fire Prevention Week held under the auspices of the National Fire Protection Association, U. S. Department of Commerce, Boards of Fire Underwriters and other National organizations interested in fire prevention.

During this week all of the member companies of the Associated Metal Lath Manufacturers will instruct their entire sales force and all agents to concentrate on metal lath as a fire resistive material. Special efforts will be made to link up metal lath with fire prevention in the minds of architects, contractors, dealers and the general public. Individual brand names will be avoided and all will work for a more general recognition of the fire resistive qualities of metal lath.

The association has arranged with the Society for Fire Resistive Frame Construction to distribute a design for a test house which is published by that society. Efforts will be made to have this house reproduced in as many localities as possible and set fire to it on Fire Prevention Day, October 9, which will be Tuesday of Metal Lath Week.

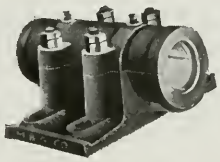
This test house is designed so that one-half is built with the usual wood construction and the other half of fire resistive frame construction, using metal lath on the inside and metal lath and stucco with a fire resisting roof outside.

It is believed that no more effective method of visualizing to the public the fire resistive qualities of metal lath could be used than this practical demonstration.

Change of Name

Announcement is made that the Great Western Power Company of California has purchased the properties and assumed the obligations of the City Electric Company, 347 Grant avenue, San Francisco, and hereafter all business will be conducted under this name.

Insofar as the consumer is concerned, the change is one of name only, as for some time the Great Western Power Company of California has owned the stock of the City Electric Company, and since 1911 the physical properties of the City Electric Company have been, and are at this time being operated as a part. Mr. J. B. Black will continue as general sales manager.



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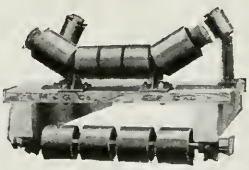

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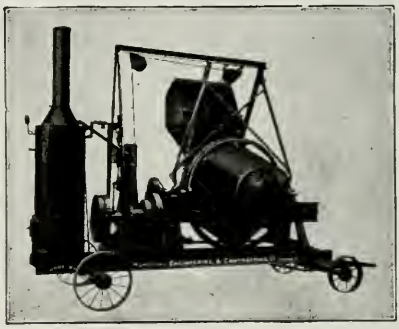

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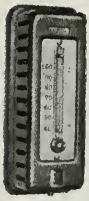

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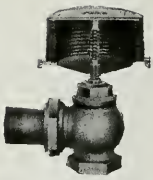

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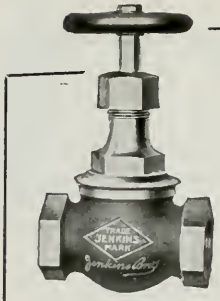

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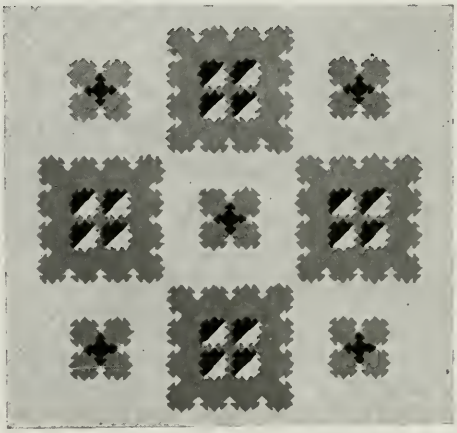

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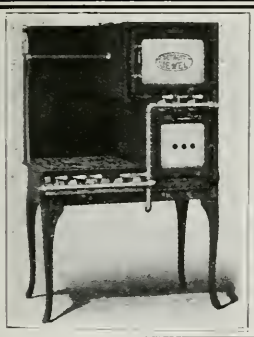

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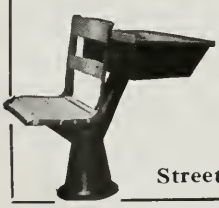

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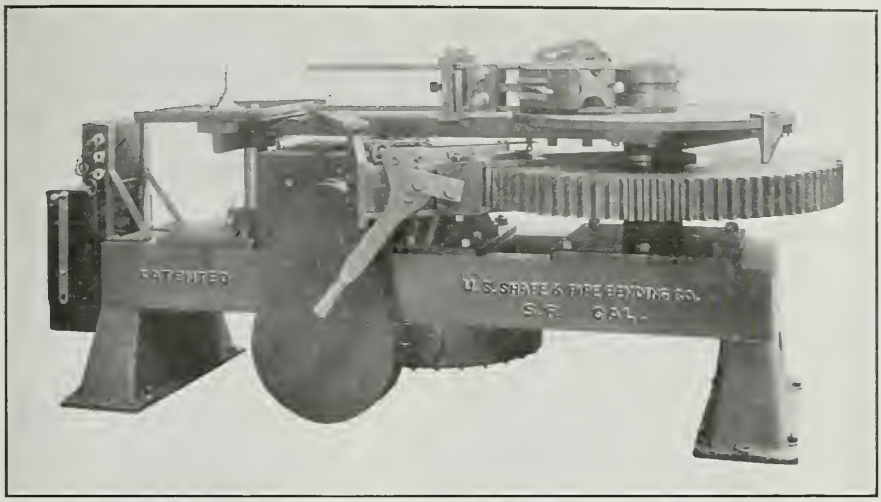

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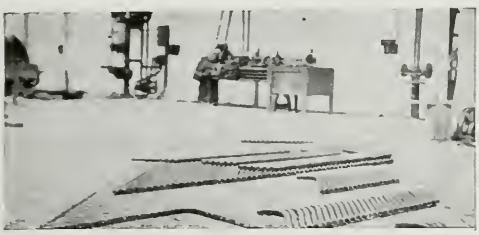

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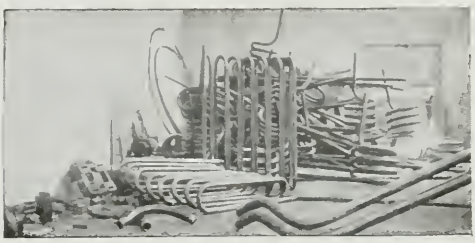

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The Architect and Engineer—October, 1919 — No. 1, Vol. LIX. Published monthly—$2.50 a year—627 Foxcroft Building, San Francisco, California. Entered as second-class matter, November 2, 1905, at the Post Office at San Francisco, California, under the Act of March 3, 1879.

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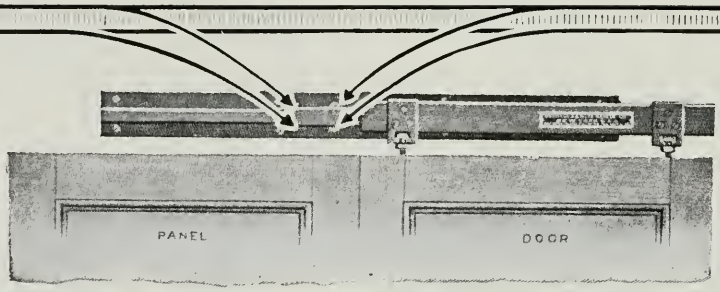

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NePage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

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- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco.
- W. L. Eaton & Co., 112 Market St., San Francisco.

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- H. N. McNab, 2307 17th Ave., Oakland.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

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- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

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- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 509 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Company, New Britain, Conn., represented in San Francisco and Los Angeles by John Rountree Co.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

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American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Inlaid Floor Co., 600 Alabama St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 509 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC. (Continued)
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

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Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

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Ralphs-Pugh Company, 530 Howard St., San Francisco.

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Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.
Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

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Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

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The Tormey Co., 1042 Larkin St., San Francisco.

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Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

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James A. Nelson, 509-11 Sixth street, San Francisco.

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J. L. Mott Iron Works, 553 Mission St., San Francisco.

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- Pacific Building Materials Co., 525 Market St., San Francisco.
- Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
- Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
- Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
- George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
- California Redwood Association, 216 Pine St., San Francisco.
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Portland Lumber Co., 16 California St., San Francisco.
- Sunset Lumber Company, First and Oak Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

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- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Rix Compressed Air & Drill Co., San Francisco and Los Angeles.

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- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
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Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
The Glidden Company of California, 123 Hooper St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
California Brick Company, Niles, Cal.

PENCILS
Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
A. Knowles, Call-Post Bldg., San Francisco.
MacGruer & Simpson, 180 Jessie St., San Francisco.
James F. Smith, 273 Minna St., San Francisco.

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Alex Coleman, 706 Ellis St., San Francisco.
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A. Lettich, 365 Fell St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

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California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

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PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
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Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Patent Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING
New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS
Pacific Building Materials Co., 525 Market St., San Francisco.

SAND
Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.
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SCHOOL FURNITURE AND SUPPLIES
C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

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Jas. A. Nelson, 509 Sixth St., San Francisco.
Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS
Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SKYLIGHTS
H. H. Robertson Co., Hobart Bldg., San Francisco.

STEEL HEATING BOILERS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL
Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.
U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING
Badt-Falk & Co., Call-Post Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
Trucson Steel Co., 523 Tenth St., near Bryant, San Francisco.
W. S. Wetenhall Co., 725 Second St., San Francisco.

STEEL ROLLING DOORS
Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH
Bayley-Springfield solid steel cash, sold by Pacific Building Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 555 Tenth St., San Francisco.

STEEL WHEELBARROWS
Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

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Fuller & Goepp, 34 Davis St., San Francisco.

SUMP AND BILGE PUMPS
California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

SWITCHES
Wemco Safety Switch, manufactured and sold by W. E. Mushet Co., 502 Mission St., San Francisco.

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United Electric Company, Canton, O., manufacturers of Tuec Cleaners, sold in California by San Francisco Compressed Air Cleaning Co., Stockton and Sutter Sts., San Francisco.

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General Fire Extinguisher Co., 453 Mission St., San Francisco.
Great Western Supply Company, 549 Howard St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

VARNISHES
W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

VENETIAN BLINDS, AWNINGS, ETC.
C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

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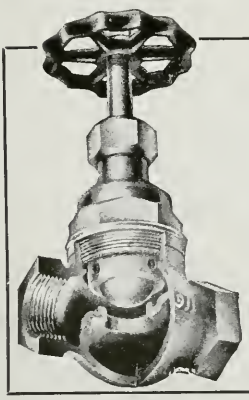

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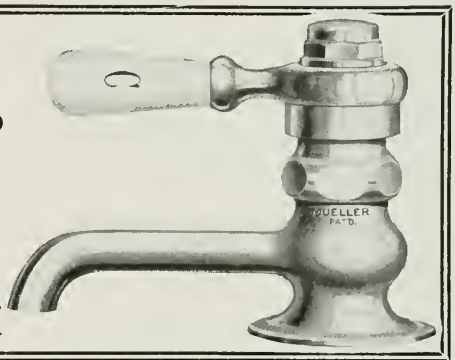

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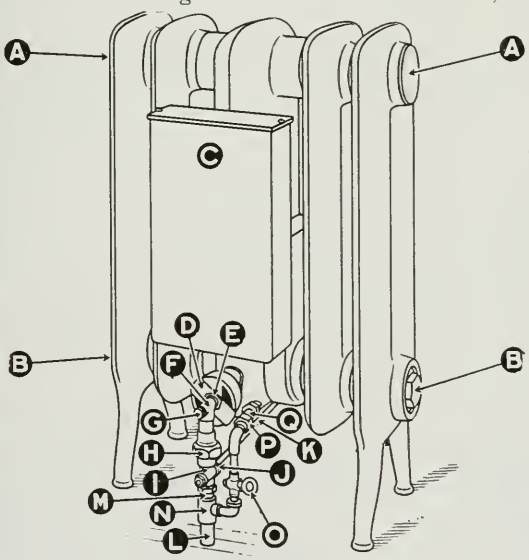

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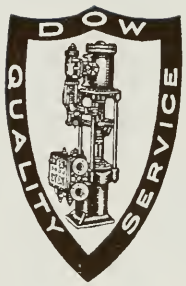
SIMPLE 

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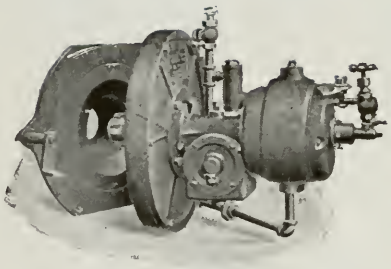

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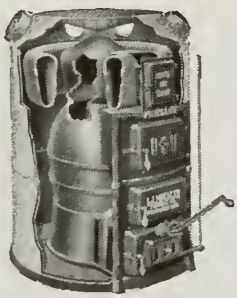

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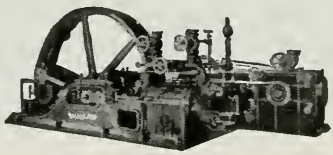

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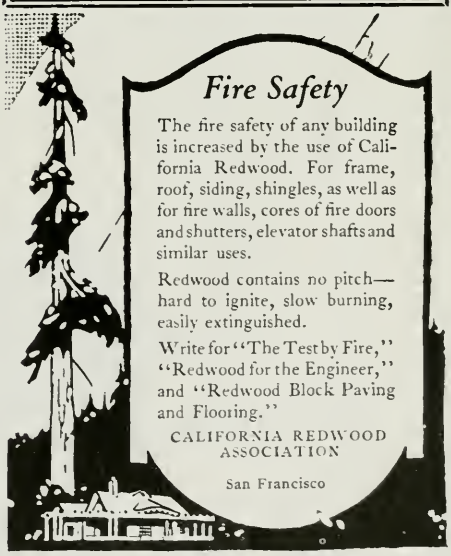

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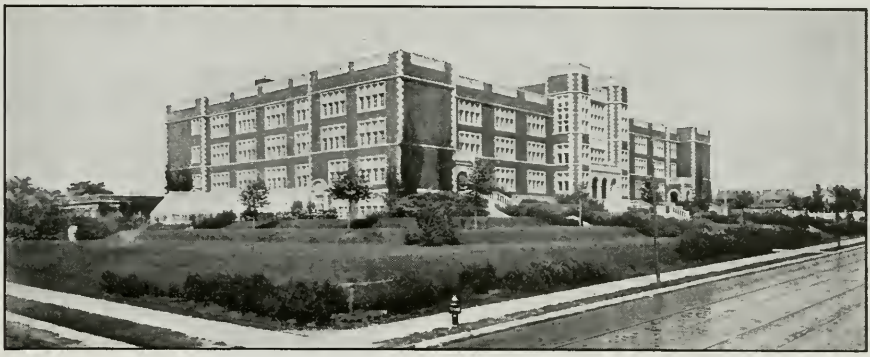

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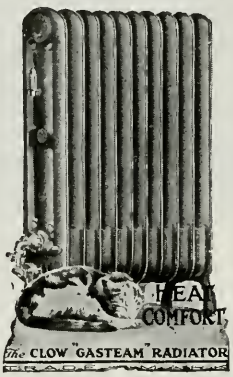

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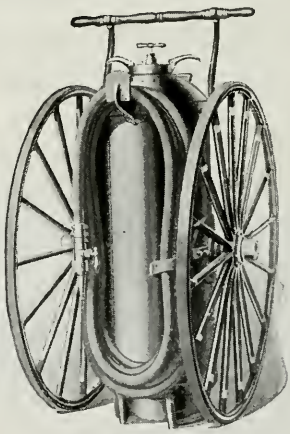

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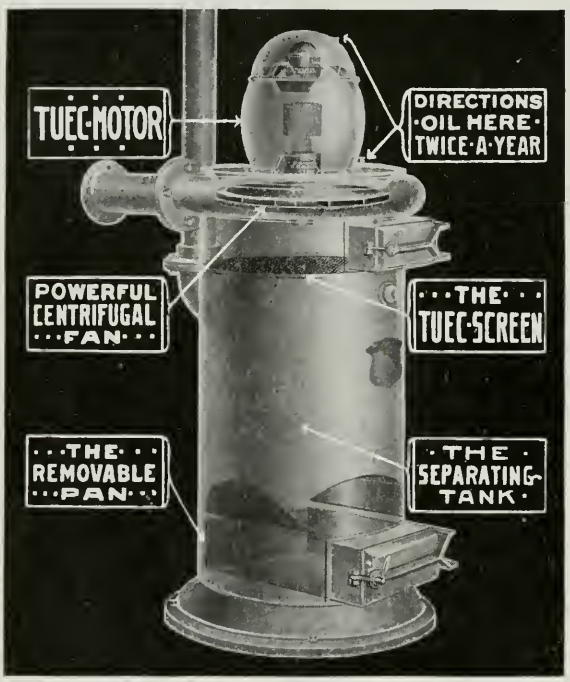

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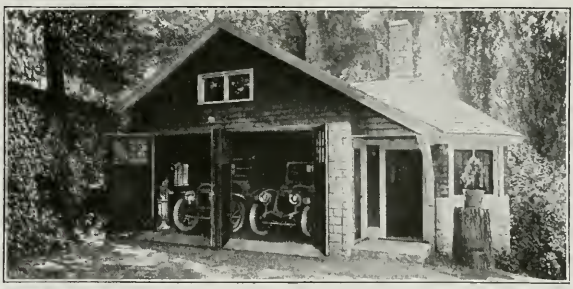

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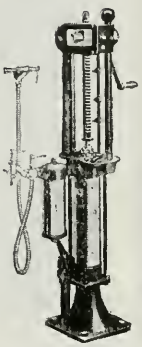

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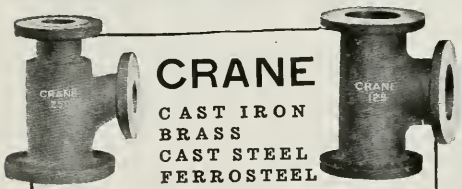

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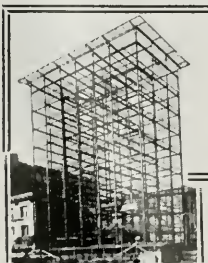

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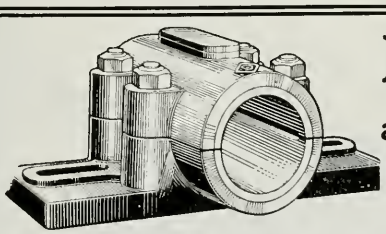

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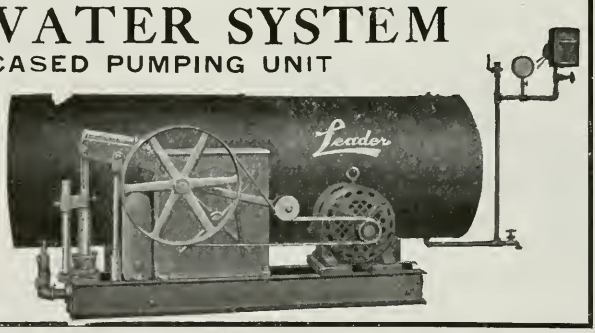

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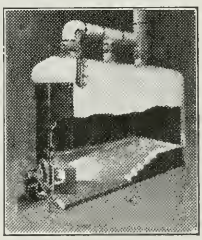

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The Architect and Engineer

Volume LIX. Incorporated Number 1.

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BAKEWELL & BROWN, ARCHITECTS

THE
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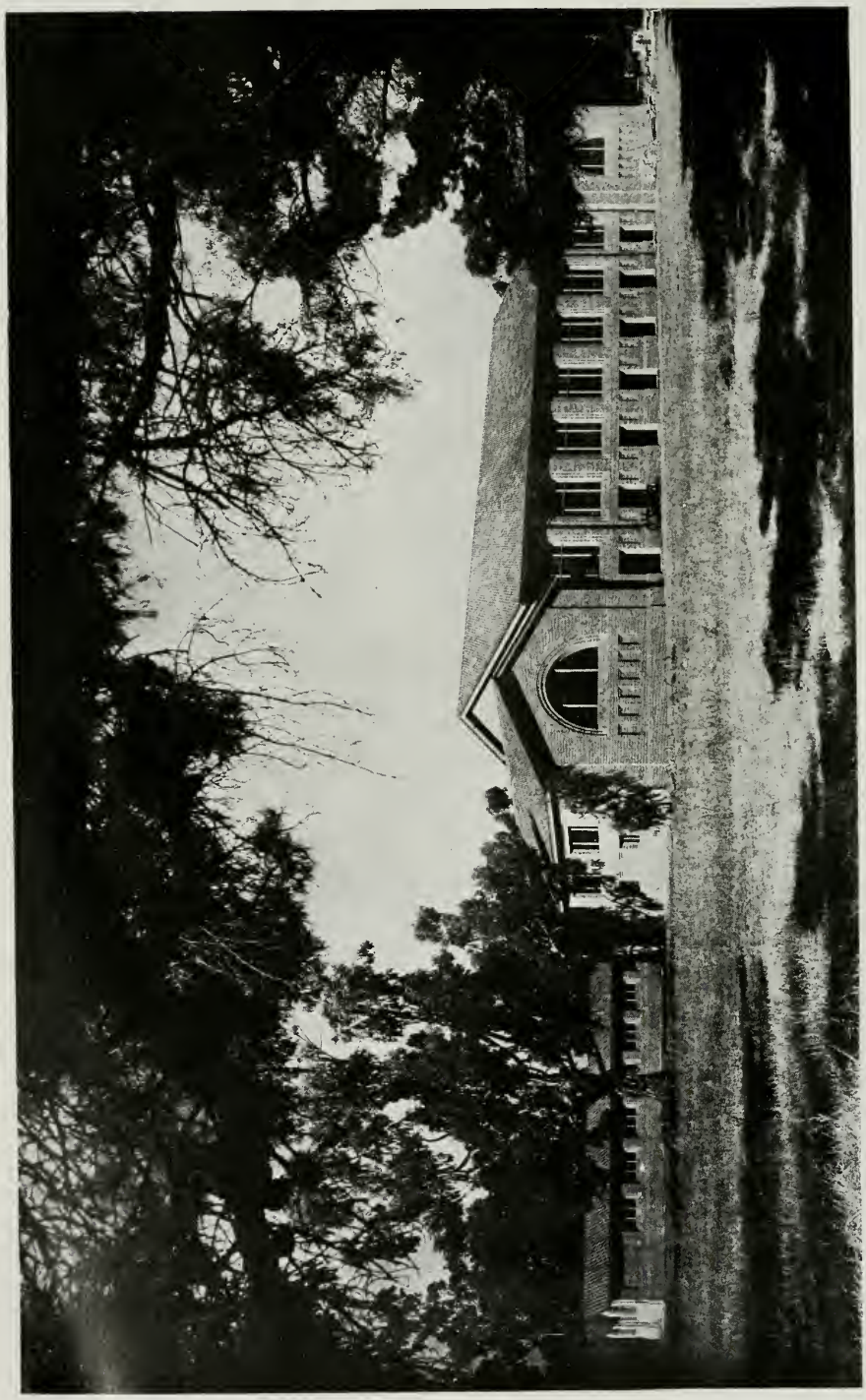
OCTOBER, 1919 Vol. LIX. No. 1

Leland Stanford Junior University

By IRVING F. MORROW, Architect

TO ANYONE familiar with the coast and valley regions of California a whole scene will arise at the mere words "California landscape." And yet, of a truth, the face of California is like the human face, ever presenting a few simple features which are constant, yet varying infinitely in aspect and expression. Imagine, then, a stretch of level grass, golden throughout a good two-thirds of the year, dotted with oaks of dark olive green. Before, seen between and over the gnarled and spreading oak tops, lies a range of distant rose, with delicately modulated profile against the blue sky. Behind, out of oak-clustered hollows, rise rolling hills leading back to a tree-mantled ridge whose blue crest is serrated with redwoods. Such, in short, is the setting of Leland Stanford Junior University, where extent of site, breadth of outlook, and the significance of the institution all combine to produce an architectural problem of unusual appeal.

The characteristic feature of the University's architecture, the cloisters and continuous arcades, is due to the founders. It was the idea of Senator and Mrs. Stanford to adapt the style of the Spanish Missions of California. At its inception the work was entrusted to Mr. H. H. Richardson, who, while adhering to the monastic composition, altered the expression to that derivative of French and Spanish Romanesque which seemed the natural idiom of his mind. At Mr. Richardson's death the still unfinished scheme was taken up and completed by his successors, Messrs. Shepley, Rutan & Coolidge.



GYMNASIUM, LELAND STANFORD JR. UNIVERSITY
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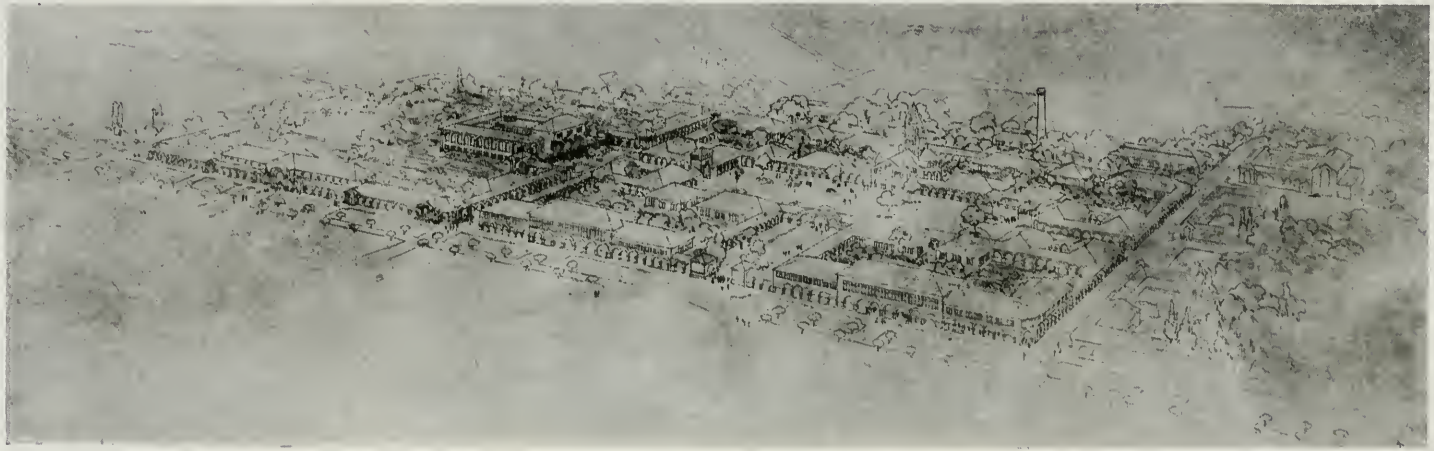
ORIGINAL SCHEME, LELAND STANFORD JR. UNIVERSITY

Shepley, Rutan & Coolidge, Architects



DEVELOPMENT OF NEW PORTIONS, LELAND STANFORD JR. UNIVERSITY

Bakewell & Brown, Architects

The plan thus developed is, as noted above, what is known as a monastic type. The buildings are grouped in three quadrangles, or rectangular blocks, which are composed on two major axes (in addition to the various minor axes of the component parts). The primary axis traverses a long tree-lined avenue leading from the town of Palo Alto and intersects the central quadrangle in the direction of its short dimension; the secondary axis runs at right angles to the primary one, through the length of the three quadrangles in line. Within each of these quadrangles are arranged one or more interior courts, around which, as well as around the exterior of the entire group, run continuous lines of open arcade. Buildings are so composed as to recognize architecturally only these principal courts and the perimeter of the entire mass; their rear portions fall on minor courts screened by arcades, and are allowed to assume such forms as convenience may dictate. Thus the isolated building may be said to be architecturally

ART GALLERY, LELAND STANFORD JR. UNIVERSITY
Bakewell & Brown, Architects

non-existent; the unit of composition is instead the court, embracing facades of several separate buildings, bound together and unified by arcades.

The advantages of such a scheme are obvious. The whole mass is compacted; the greatest flexibility is allowed in the planning of the component units, which, being destined to a great variety of uses, naturally require a great diversity of form; and shelter from both sun and rain is afforded the numbers of students who must be continually moving from point to point; nor is the sentimental value of a feeling of seclusion and intimacy to be overlooked.

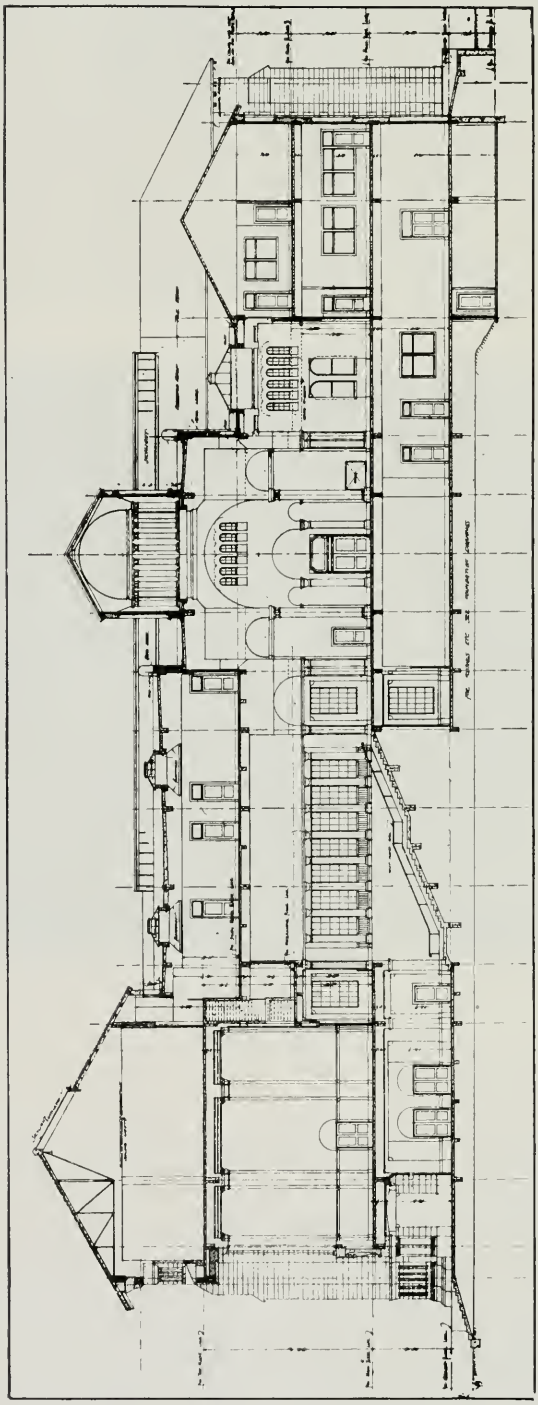
At the time of the founding of the institution the central quadrangle was erected by Messrs. Shepley, Rutan & Coolidge, and the Chapel was later added by Mr. Clinton Day. This unit embraces the main academic departments of the University. The Chapel stands at the back of the

group, closing the primary axis of the scheme, and becomes, by virtue of its position and its mass, the dominant element of the entire composition. Before it opens a large court whose axes are the primary and secondary axes of the whole scheme; and from this court, at the front and two ends, smaller courts form avenues to the outside. The two ends of the secondary axis are occupied by open archways. Originally the main entrance opposite the Chapel was also through a triumphal arch of large dimensions. This was destroyed in the earthquake of 1906, and has never been rebuilt; and if memory serves correctly the loss is not uncompensated. More serious was the destruction in the same catastrophe of the large Romanesque spire surmounting the Chapel crossing. This has been replaced only by a low pyramidal roof, leaving the building both altered in composition and reduced in mass. The latter in particular is unfortunate, now that the area of the University buildings is extending. All of

INTERIOR, DORMITORY FOR WOMEN, LELAND STANFORD JR. UNIVERSITY
George W. Kelham, Architect.

these buildings are constructed of deep yellow San Jose sandstone, with roofs of red tile.

In addition to the practical advantages already pointed out, this quadrangle, as actually worked out, has other features to its credit. The prevalent horizontality of its lines, as well as its rich color, is harmonious with both the conformation and the spirit of the site; and its arcaded treatment possesses a broad and generous scale, and affords numerous views of unquestioned beauty and picturesqueness. Yet beyond these general considerations it reveals many and serious shortcomings. Foremost is a lack of imagination in the introduction and treatment of incidents. Minor modulations of plan and motif would seem to be required by the extent of the work as well as by the picturesqueness of the style employed; yet such are practically non-existent. Rigidity and uniformity



LONGITUDINAL SECTION OF LIBRARY
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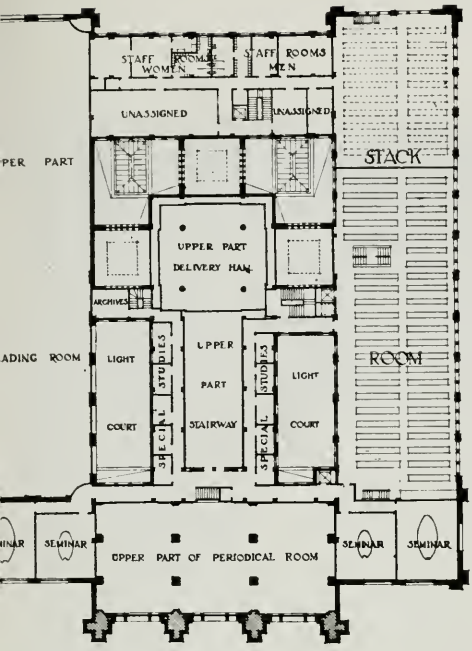
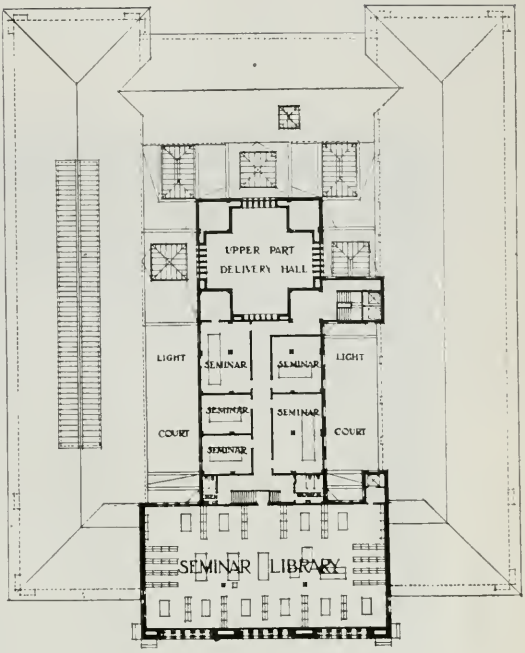
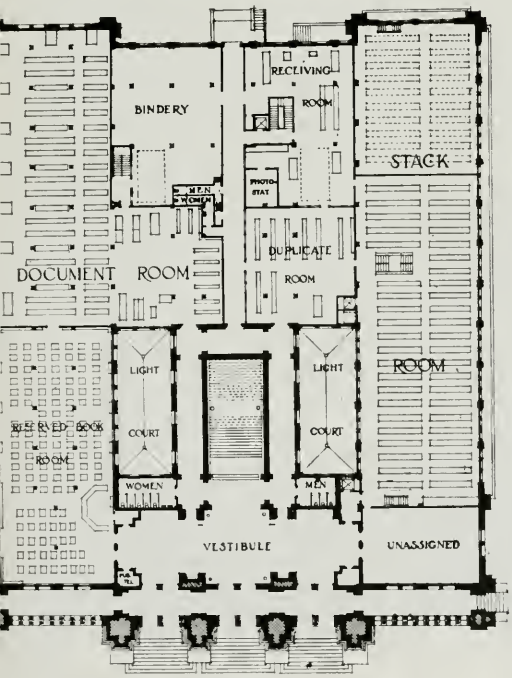


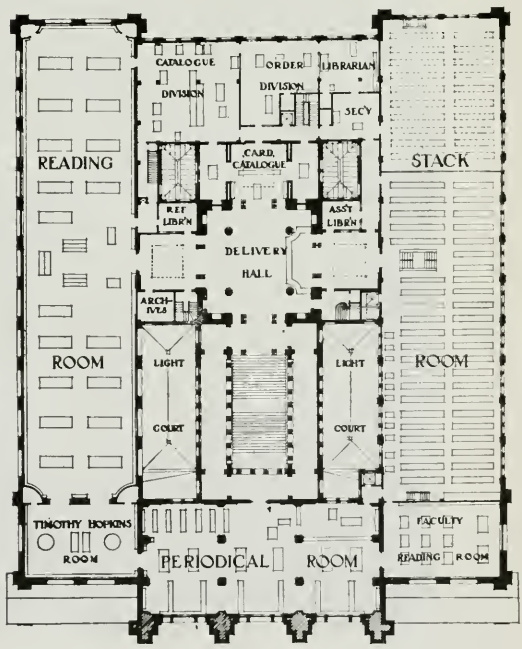
Third Floor



Fourth Floor



Ground Floor



Main Floor

PLANS OF LIBRARY, LELAND STANFORD JR. UNIVERSITY
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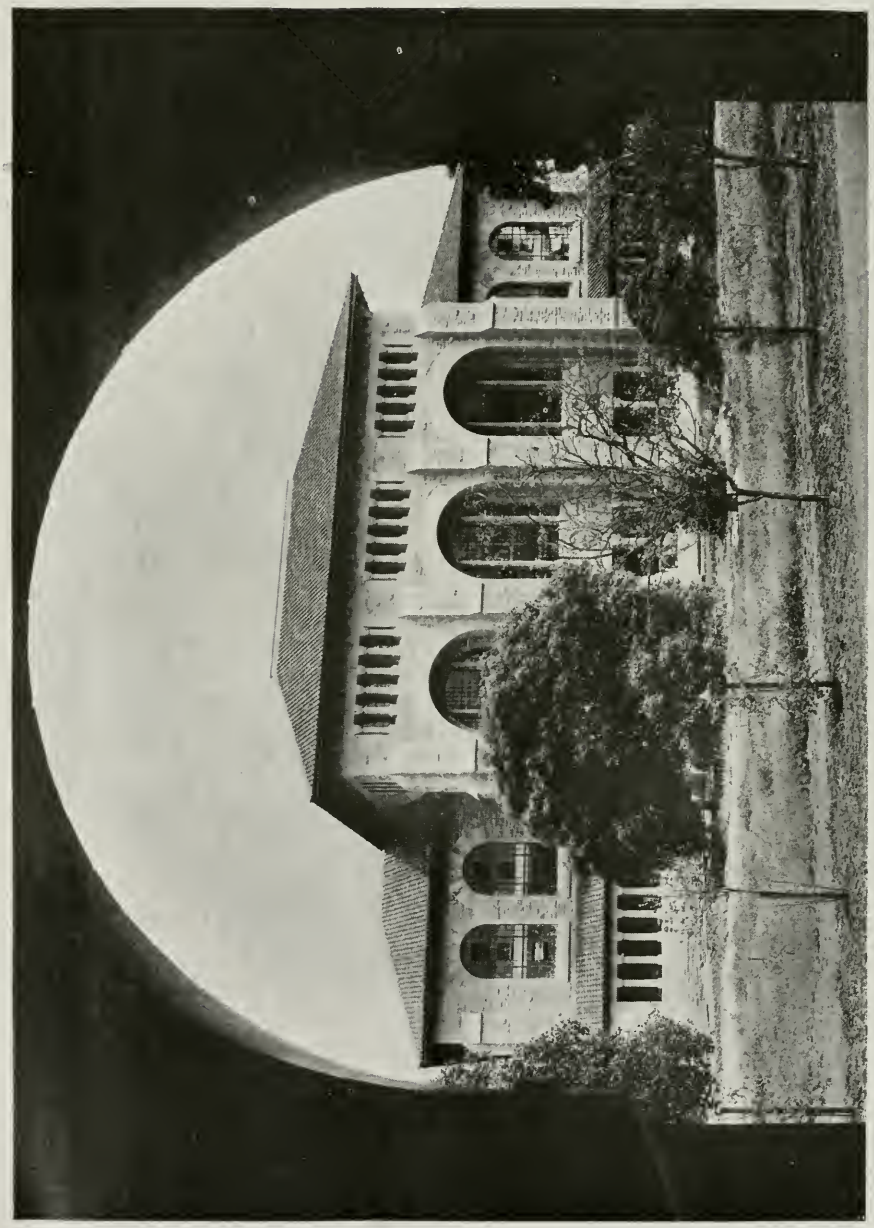

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INTERIOR, LIBRARY, LELAND STANFORD JR. UNIVERSITY
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of matter are ill at ease with freedom of manner, resulting in a disharmony such as might be produced by expressing the rigorously formal thought of Pope in the familiar language of Burns, or by rendering the exquisitely symmetrical music of Haydn or Mozart on guitars and mandolins and harmonicas. This lack of incidental and accidental variation leads to monotony, a monotony aggravated by the heavy and squat proportions of all elements. One comes to have a sense of miles of arches being slowly driven into the ground by acres of tile roofs. Coming down to smaller matters, screening arcades do not always effectively screen, leaving far too many glimpses of hastily treated rears of buildings on minor courts, with dumpy stairs and bare pipe rails. Lastly, details throughout are unnecessarily coarse and devoid of grace.

Such, in general, is the situation with which Messrs. Bakewell & Brown were confronted upon undertaking the development of the scheme from this point. They are now carrying out the second quadrangle, at the south of the original one, of which to date the Art Gallery and the Library have been completed. The new work conforms to the precedents set by the old in the character of plan adopted, in the general style employed, and in the materials used.

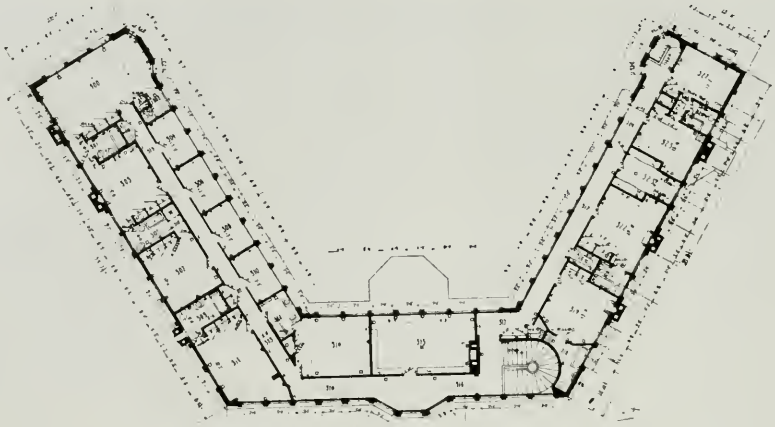
The Art Gallery, which dates from two or three years back, is a moderate sized building located at the forward corner of the new quadrangle.

The Library, one of the University's largest structures, has just been opened for use. Its location has been chosen as nearly as possible central to the whole institution. It occupies in this new quadrangle a position analogous to that held by the Chapel in the central one; that is to say, it stands at the back of the group and closes the major axis of the quadrangle (which is the transverse or secondary axis of the whole scheme, as explained above). It is the intention to balance it at a future date by a structure yet to be selected, which will occupy the corresponding position in the quadrangle at the opposite end of the secondary axis. Thus these two buildings will constitute accents forward from the Chapel in plane, but subsidiary to it in mass, flanking it at either end of the scheme. The position and bulk accorded the Library, then, are seen to serve the interests of convenience, necessity, variety, and the requirements of the larger composition.

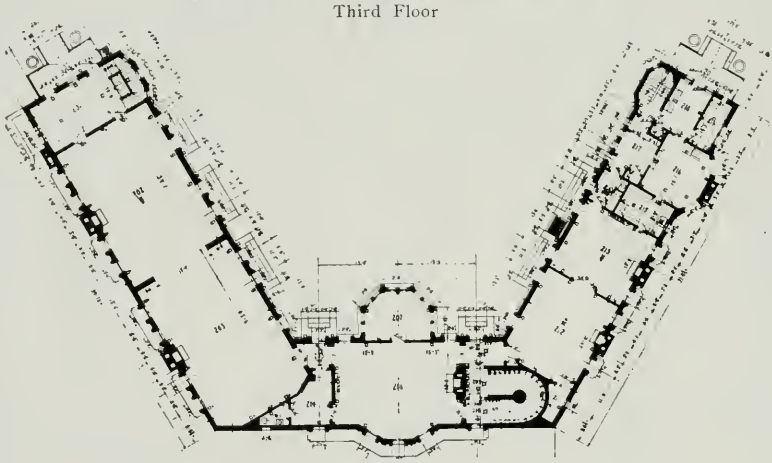
If these buildings are to be intelligently judged, it is essential in approaching them to recall the nature of the University's plan previously discussed. They are in reality parts of an incomplete whole, and though they stand today as two isolated structures, they were not designed to be so seen. Reference to the revised bird's-eye perspective will clarify much which at first sight appears to demand explanation. The Art Gallery, which in its present fragmentary form seems to be a composition almost wilfully capricious, is seen to be but an incidental motif turning the corner of a continuous arcade, of which but half has been constructed. The unrelieved bulk of the Library is seen to occupy a position at the back of an arcaded court, and lacks lower projecting arms designed to flank and lead up to it. The intended intervention of connecting structures also serves to explain apparent lack of relation between adjoining facades of the same building.

Bearing these points in mind, the new quadrangle certainly seems to contain the promise of a group with far more variety and interest than are possessed by the old, in each of proportion, mass, and handling; and this without the sacrifice of unity. On the other hand, certain deficiencies

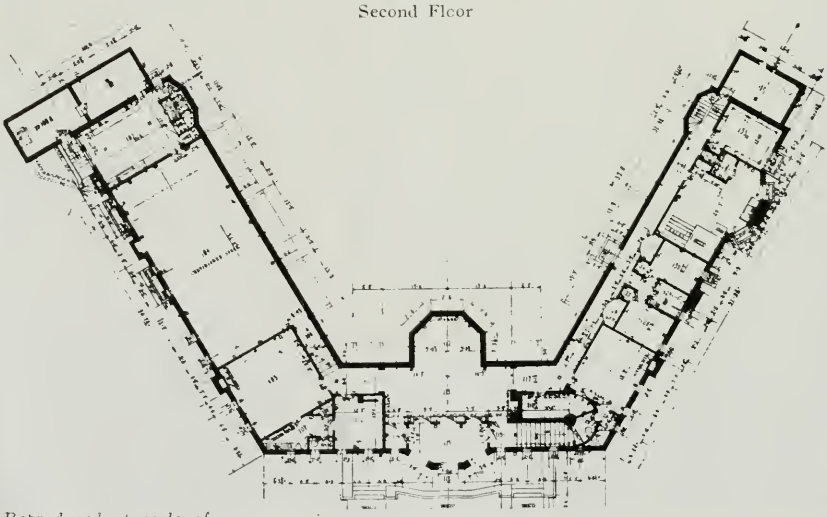
STAIR HALL, LIBRARY, LELAND STANFORD JR. UNIVERSITY
BAKEWELL & BROWN, ARCHITECTS



Third Floor



Second Floor



Reproduced at scale of 1 inch equals 48 feet.

Ground Floor

PLANS, PRESIDENT'S HOUSE
LELAND STANFORD JR. UNIVERSITY
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

South Side

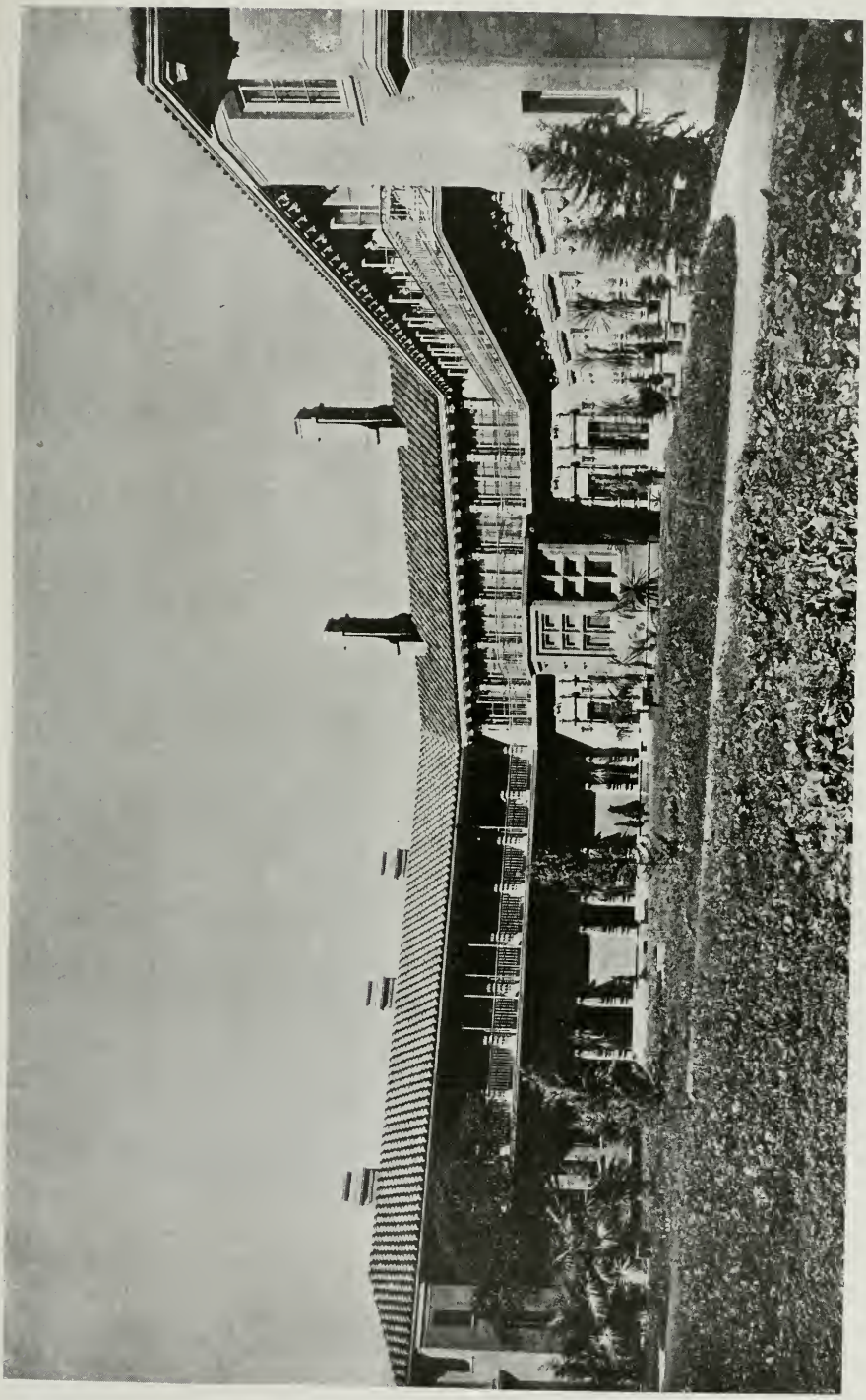
Front

North Side

Reproduced at scale of 1 inch equals 24 feet.

EXTERIOR ELEVATIONS, PRESIDENT'S HOUSE
LELAND STANFORD JR. UNIVERSITY
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

PRESIDENT'S HOUSE, LELAND STANFORD JR. UNIVERSITY
LOUIS CHRISTIAN MULLGARDT, ARCHITECT



COURT, PRESIDENT'S HOUSE
LELAND STANFORD JR. UNIVERSITY
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

of the former work have been suffered to persist. There is a prevalent tendency to heaviness in the elements. Details often seem unnecessarily crude and bulky. A certain amount of grace is surely not incompatible with strength. In view of the exceptionally deep arch reveals of the Library front, the buttresses on the piers seem excessive from the standpoint of design; and the construction certainly makes no such exactions.

ENTRANCE, PRESIDENT'S HOUSE
LELAND STANFORD JR. UNIVERSITY
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

On the interior the Library is treated with great simplicity, even austerity. Little of a traditionally architectural nature has been attempted, save in the main stairway and delivery hall, which are Byzantine in character. The form here is effective, but the execution of surfaces, etc., is colorless. The use of clear glass in the stair hall looking directly out into the most un-Byzantine light courts, is an unaccountable lapse. Of all portions of the interior the periodical room is the most effective.

It is beautifully proportioned, the piers are interestingly and naturally handled, the color is unobtrusively agreeable, simplicity is sincere and without suspicion of neglect; the result is genuinely impressive.

Although the scheme above described constitutes the University proper,

DETAIL OF SIDE, PRESIDENT'S HOUSE
LELAND STANFORD JR. UNIVERSITY
LOUIS CHRISTIAN MULLGARDT, ARCHITECT

building has not been confined entirely within these limits. At an early date widely separated monumental structures were contemplated in front of the main group, flanking the avenue between the University and the town of Palo Alto. This plan was only partly carried out, but proved

unsatisfactory and has subsequently been abandoned. Distances were found to be excessive; and, architecturally considered, some of the buildings erected were, to say the least, unfortunate.

Directly behind the central quadrangle lies a line of shops and service buildings. They conform in materials to the main scheme, but in design they are quite uninspired.

Of recent years there have been added other important buildings outside of the scheme proper, and unrelated to it in either position or style. How far so wide a disparity in the handling of parts of the same institution may be justified is an open question, which it is impossible to take up at this time. Each of these buildings can only be accepted on its own merits as an architectural entity, without reference to the plan discussed above.

COURT, PRESIDENT'S HOUSE, LELAND STANFORD JR. UNIVERSITY
Louis Christian Mullgardt, Architect

The gymnasium is the work of Messrs. Bakewell & Brown. It is constructed of brick similar in color to the yellow sandstone used in the central scheme. Its main lines and masses are quiet and pleasing; and although no Romanesque elements enter into its design, it is not inharmonious with the other work.

The president's house, by Mr. Louis Christian Mullgardt, is one of the most interesting buildings on the grounds, as well as one of the most interesting of Mr. Mullgardt's recent works. The site has been happily chosen. It stands on a slight eminence looking forward over the whole University Campus and back into the foothills of the main range; and although removed at a considerable distance from the academic buildings, it lies directly on the main axis of the University. The diverging lines of the wings produce from the front a composition which conforms with ease to its position on the knoll, and from the rear they afford a most interesting flaring or trapezoidal court. The building is of concrete

finished with medium-toned buff-pink plaster raked horizontally to a delicate texture; the ornamental work is cast cement similar in color but slightly lighter in tone. The feeling of the composition is Spanish, though archaeological precedents have been treated with the scant deference which is Mr. Mullgardt's wont. The rich unbroken band of the upper story, surmounted by its many towering chimneys, produces an effect of exuberant life, albeit conserving a degree of decorum proper to the occasion. The court at the rear, exhibiting these same elements plus its continuous balcony and delicate metal rail, and filled with sunlight throughout the day, is really joyful. Surely great fun must have been derived from working out such a composition.

The dormitory for women, by Mr. George W. Kelham, is completed in part only; although the unfinished portions are but repetitions of existing

RECEPTION ROOM, PRESIDENT'S HOUSE, LELAND STANFORD JR. UNIVERSITY
Louis Christian Mullgardt, Architect

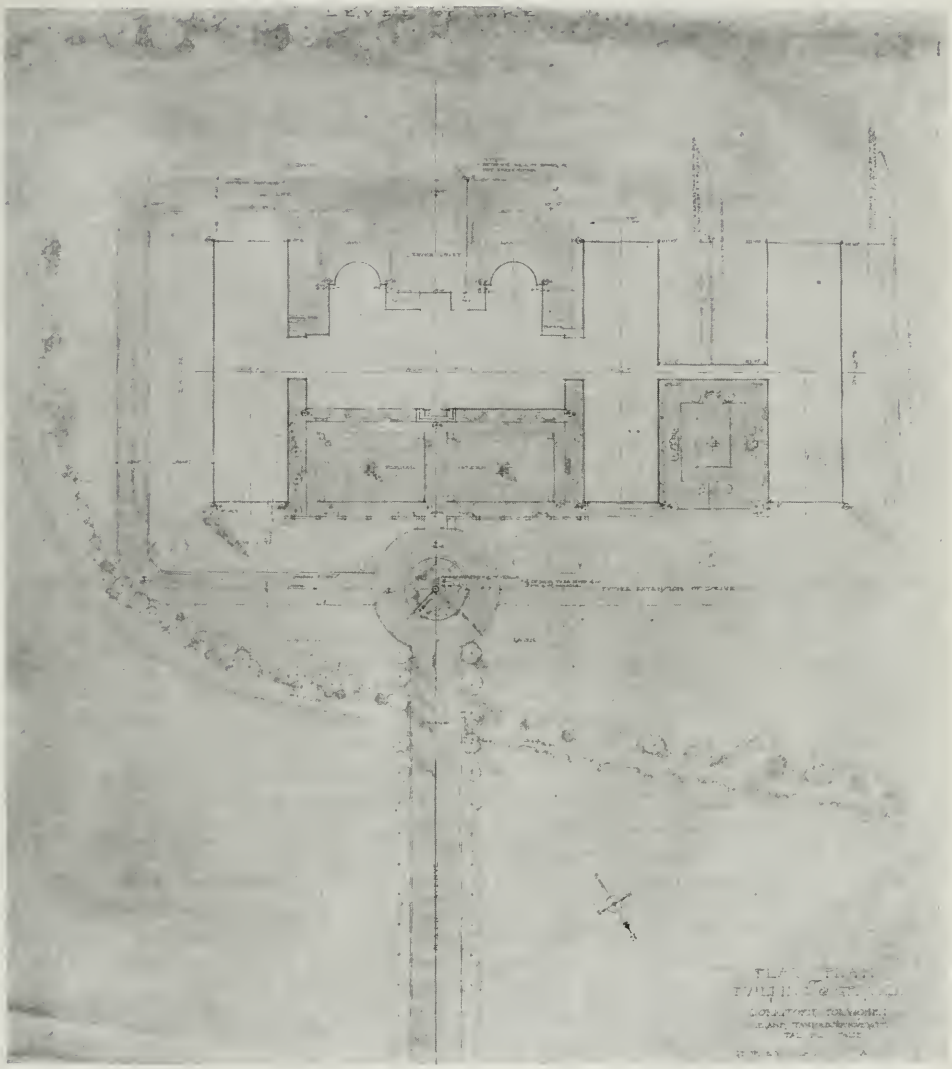
elements. In style it is simple Italian Renaissance, unornamented save for balconies and spots of sgraffito on the end pavilions and at the main entrance. The surface is medium buff-pink plaster with a slight horizontal texture. Throughout the composition, in form, color, and setting, a passion for simplicity and restraint has been allowed to banish not only the joy of life, but almost life itself. One fears that an unsympathetic gardener might ruin the scheme by cutting the lawn shorter on one side of the main axis than on the other. Such rigorous self-denial may be survived by the faultless fenestration which the Italians of the great period knew how to achieve; but this the building does not possess. The sgraffito ornament is too inconsiderable to help in the general view, although in itself it is distinctly interesting and well executed.

It might be observed in this connection that, while our architects have in the last few years executed a number of interesting examples of sgraffito work, they have displayed a singular perversity in putting it in the least

ENTRANCE, DORMITORY FOR WOMEN
LELAND STANFORD JR. UNIVERSITY
GEORGE W. KELHAM, ARCHITECT

DETAIL, DORMITORY FOR WOMEN
LELAND STANFORD JR. UNIVERSITY
GEORGE W. KELHAM, ARCHITECT

DETAIL, DORMITORY FOR WOMEN
LELAND STANFORD JR. UNIVERSITY
GEORGE W. KELHAM, ARCHITECT



BLOCK PLAN, DORMITORY FOR WOMEN, LELAND STANFORD JR. UNIVERSITY
George W. Kelham, Architect

logical and effective places. Sgraffito is essentially a surface decoration; yet the surfaces have gone bare while the ornament has been placed on structural or quasi-structural members. The answer will probably come that considerations of cost confine it of necessity to these small areas. To which the only rejoinder is that under the circumstances it is not a particularly logical method of decoration to employ.

* * *

$300,000 Mansion Sells for $85,000

The palatial Nixon mansion on Newlands Heights, Reno, Nevada, erected by the late Senator George S. Nixon at a cost of $300,000, has been sold to Mr. Sidney B. Myer of Melbourne, Australia, for $85,000.

Monuments by the Mile

By O. D. FOSTER, Publicity Director, American Red Cross

BAD roads are retarding the progress of relief and reconstruction in the war-ravaged countries overseas. Not until a thorough study of the difficulties of rehabilitation is made, does one arrive at an appreciation of the true value of good roads. The aim of the several nations where relief is being extended is to improve the public highways, that the American Red Cross may reach the impoverished, diseased, homeless refugees, engaged in the gigantic task of restoring the destruction of four years of war.

The war ushered in an era of good roads' appreciation. The truck-worn, shell-torn highways of France hindered even military activities. When Pershing would have continued his push, Marshall Foch demurred; "Impossible after September 1 because of rains and mud." But Pershing was determined.

For nine nights and three days the great trucks heaved, groaned, and turned turtle, in the mire along the way to the front. American grit and determination proved as invincible as their leaders were. They reached their destination, but what a toll was paid on those bad highways! Many died from injuries received on that drive, others contracted chronic ailments. All because there were no good roads. Thousands of horses and mules fell by the wayside, victims of sheer exhaustion. The Rainbow Division alone lost twelve hundred horses in this way. But the Saint Mihiel salient was reduced, Chateau Thierry was taken, and the Yanks passed on in triumph to the Fastnesses of the Argonne.

When the trucks, horses, and men came back along the roads after the armistice was signed, they passed American Red Cross camions valiantly striving to take relief supplies to the people of the devastated regions.

George B. Ford, director of the Reconstruction Department of the American Red Cross in France, visited all parts of the country to determine the needs of the people. He estimated that the sum of $4,000,000,000 would be necessary to restore the public works, railways, canals, highways, water works and ports of France.

Agriculture was the practical occupation of the people in the north of France. Their farms were ruined by invasion and shelling. Everything from a dose of castor oil to portable houses was needed in that district. Railroads did not enter the hundreds of tiny villages, and the American truck was the one means of transportation which the American Red Cross relief bearers could use. But the terrible condition of the roads retarded them greatly in their work and wherever possible they grasped the opportunity to assist in repairing them by helping the people who were engaged in that work.

While assisting in rebuilding the cities of Italy the American Red Cross is also restoring the roads. The American city which is being built by the Red Cross near Pisa will have two miles of good macadam road through the town, and leading down into Pisa toward the famous leaning tower. The chief building material used is called lapillo, a type of concrete made from the rock and lava of Vesuvius.

In bringing relief to the people of Montenegro the Red Cross representatives had to resort to an aerial cable tramway designed by the Austrians to facilitate the movement of ammunition. The trams have been put in daily service between Cattaro, the port of entry in the Adriatic, and the terminal stations on the mountain ridge that faces Cettinje from the sea.

The dangers of bad roads are not the only trouble which Red Cross motorists experience in Montenegro. When carrying some relief supplies

recently, renegade Montenegrans attacked the truck, firing from the rocks along the road. The Red Cross men escaped injury by hiding behind the great boxes of supplies. The bandits were deserters from the national army, who had joined the Austrians.

Bad roads are not peculiar to Montenegro; they are characteristic of all the Balkan states. When the Red Cross workers arrived in Serbia they had to resort to the buffalo for a means of travel; only these strong, slow beasts could cope with the fearful roads. Gradually the shattered bridges are being repaired, and with each one that is replaced a few more miles of railroad are opened.

Months were taken to carry relief into the mountainous regions by the Red Cross workers travelling in "kolas"—low-swung wagons hauled by oxen or water-buffalos. A journey from Belgrade to Serbia took two weeks, but now that the bridges are repaired and a truck line opened it can be made in two days.

In the Balkans, as well as in France, agriculture is the chief occupation of the people. The Red Cross has instituted tractor trains which will aid in the cultivation of the neglected farms but because of the bad roads much of their time is consumed in traveling through the country.

American doughboys were employed by the Red Cross to drive the supply trucks over the roads. Frequently they lived on bread, cabbage soup and pinnard, or would run down a chicken "accidentally" and have a feast. Their skill with motors resulted in only one of the eight Red Cross cars being out of commission, while two-thirds of the Allied vehicles were hung up or in ditches.

Restoration of the agricultural lands is conceded by the Red Cross and all students interested in the rehabilitation of war-countries to be the chief means of national reconstruction, peculiarly necessary to their present day problems. While the work has progressed rapidly, bad roads have ever been a serious obstacle. Until the roads are repaired, farmers cannot transport their supplies or products and the Red Cross tractors, health circuits, and relief trains can not use their best speed. The lack of railroads still employed by the people also increases the need of good roads, and when women appealed to Captain Edward Bickel of the American Red Cross, an engineer from Seattle, to work on the road that was being constructed in Syria, he agreed, though not without some demur.

Arriving in Aintab, Syria, the Red Cross Commissions had found it was practically impossible to reach the outlying towns because of the roads. Captain Bickel appealed to the bishops and leaders of the Armenian refugees to secure labor for him. The only men not killed or maimed in the war were old and infirm, but the women were young, strong, accustomed to labor. Sceptical at first, but forced by circumstances, the American hired 500 female laborers.

"They made better workers than many gangs of male laborers I have had on engineering work back home," Captain Bickel said. "They worked steadier, had less complaint to make and seemed to improve in health under the conditions. The work took their minds off their troubles and gave them the independence they liked. We paid them eleven piastres (twenty-five cents) a day and had a waiting list of hundreds for jobs."

When the American Red Cross leaves the war-ridden countries of Europe monuments, miles long, will be left by her. For the roads built and repaired through the organizations activities will be silent yet eloquent proofs of the generosity of the American people who financed the labor.

Regulating the Height of Buildings—Disadvantages of Skyscrapers*

By V. D. ALLEN

SKYSCRAPERS do not always denote the greatest civic development of our cities. It is common knowledge that men who are continually confined in dark prisons, grow anaemic, and even die, although otherwise well cared for, and it is also a well-known fact that Arctic explorers who have experienced the long winter night of the polar regions grow haggard, morose and quite abnormal under this condition, all of which symptoms disappear with the return of the sun. Can we expect to have a strong and progressive race of people when thousands of them are compelled to leave their homes before the sun is fairly up, take a long ride in a street car, worse still, perhaps through a subway, and work all day in a room where the sun never shines, a room ventilated by courts?

In the time of the Roman Empire there was a very long litigation between the Emperor of Constantinople and a resident of that city back in the third or fourth century, A. D., when Constantinople was made the eastern capital of the Empire. The real estate speculators arrived there promptly and began to make money by booming land values. The Emperor picked out a very beautiful site for his palace, on a hill which overlooked the water. This fellow picked out a piece of ground which was in front of the Emperor's proposed palace, and he erected a building of stone and brick five or six stories high, then built about four stories of wooden structure on top of that. The Building Commissioner of that time ordered him to take the wooden part off, but he refused and hired a good lawyer, and it took ten years for the Emperor to get the top pulled off that building, this fellow insisting that it was simply temporary, to be used by workmen while completing the building below it, and he got by with it for ten years.

They had buildings in Jerusalem 100 feet high. In Rome they had plenty of high buildings, and they had a peculiar type of high buildings there, each story projecting out a little beyond the story below it, until on the narrower streets, many of which were only ten to twelve feet wide, the buildings actually met at the roof line, so that people could travel across the top of the buildings. And as they went up the stories grew lower until the top stories were only five or six feet high.

Probably the greatest evil resulting from high buildings is that of street congestion. The high building houses thousands of people, nearly all of whom enter and leave the building about the same time daily. To come from their homes, which are scattered in all directions, they require street cars, automobiles or other vehicles, which as they converge to one point, create serious congestion on roadways, as well as sidewalks. For example, a building housing 1,000 people calls for the use of 12 or 15 street cars to carry the occupants, and these cars would fill the car tracks for an ordinary city block. It must be remembered that for each 1,000 fixed users of a building, there must be several hundred transients to be reckoned with. If one large building has so pronounced an effect upon street congestion, what must be the result when we reach the point where we have entire city blocks so improved.

A traffic count in New York shows us the startling effect of congestion. On Fifth Avenue at Forty-second Street from 8:30 a. m. to 6:30 p. m., a period of ten hours, during which time there passed 18,800 vehicles and 137,780 pedestrians, and for the same hours counts taken at ten points on Fifth Avenue, ranging from Fourteenth Street to Fifty-ninth Street inclusive, showed an average of 14,096 vehicles and 82,506 pedestrians. We think of

*A paper read before the Cleveland Engineering Society.

a city having a population of 137,000 as a real town, yet here we have a condition where all the people of a large city pass one point on one street in a period of ten hours, and a mass of vehicles, which, allowing 20 feet to each one, would make a procession 71 miles long, also passing at the same time. Such vast numbers are more than we can fully realize, and should be of themselves sufficient comment.

Manifestly, with such crowds in the street, there must be serious congestion within the buildings themselves, some of which house as many as 3,500 people, to which, if we add the transients, we can safely estimate that more than 4,000 persons are in the building at any moment for a number of hours each day. Four times daily these persons must enter or leave the building in a comparatively short space of time, which must create an elevator congestion that is both serious and dangerous.

Let us consider some of the results of the street and building congestion:

Obviously, the wear on the street pavement must be very severe, and the cost of maintaining good streets under such a concentrated heavy traffic is of necessity high. The problem of street building, to stand up under heavy traffic in the cities is a serious one as every engineer knows. There must also be present a large amount of dirt, dust and other debris, which when blown by the wind is injurious to goods, buildings, furnishings and health. Estimates have been made from time to time of the property loss due to smoke and dirt in cities, and the most conservative of these estimates are very large amounts. The noise and confusion resulting from so vast a throng of moving people and vehicles is very great, and according to the medical authorities, produces a noticeably injurious effect on the health of those who are constantly a part of it.

There are many problems of transportation, both of humans and produce, which are created by this congestion.

The collecting and concentrating of such great numbers of people into a small area and distributing them to their homes again daily, brings street, street car, terminals, shelter and other problems of great magnitude and difficulty. The raw material which they use, and the finished product which is produced from them, together with the appliances and power used in the processes, and the feeding of those so engaged, creates problems of transportation and handling of goods, which are large and complicated.

Besides the congestion above the surface, there is a serious congestion beneath the surface of the streets, for the presence of many large buildings requires an increase in the sewers, water lines and conduits, and other ground service, as well as the constant tearing up of the already over-crowded street surfaces to renew or repair the underground work. Investigation shows that as congestion of traffic on streets increases, the number of accidents increase in about the same, or perhaps in an accelerating ratio, and of necessity the number of men employed as traffic officers must be increased, which is another cost that the city as a whole must pay that we may have high buildings.

Another effect of congestion is the problem of the feeding of this vast throng of people at the noon hour. There can be no doubt that this shows itself in lower health since thousands must eat in a hurry, food which is poorly cooked, and under conditions which are not congenial, and after their meal there is no chance for the relaxation or the recreation which they need.

The loss of sunlight at the street surface and to the surrounding buildings is in itself an evil of sufficient magnitude to condemn high buildings. I shall give you some figures developed by the engineers of the New York Commission. They apply with equal force to Cleveland, since we are in about the same latitude as New York. They base their figures on the shortest day of the year, which is December 21 at noon, and find that the Adams Express Company Building, which is 424 feet high, casts a shadow

875 feet long. The Equitable Building, which is 493 feet long, casts a shadow 1,018 feet long. The Singer tower, which is 546 feet, casts a shadow 1,127 feet long, and the Woolworth tower, which is 791 feet high, casts a shadow 1,635 feet long.

Cutting off the sunlight from the street produces a damp and dreary effect, alike depressing and unsanitary, but while the loss of sunlight at the street surface is bad, the effect of cutting off sunlight on the occupants of the buildings is a more serious evil.

Under the same condition, that is, at noon, December 21, at a north and south street, and having buildings on both sides of the street, one and thirty-five hundredths times the width of the street in height, it is claimed that all the windows get some direct sunlight, but if the buildings were increased to one and one-half times the width of the street in height, then but 90 per cent, of the windows will get direct sunlight, and as the height of the buildings are increased the amount of windows getting direct sunlight decreases rapidly until when we have buildings six times the width of the street in height, the percentage of windows which receive direct light is reduced to 22½.

Not only this, but under the same condition a window which has a building on the opposite side of the street one time the width of the street above it, has direct sunlight entering it but 12 per cent. of the time that the light would enter an unobstructed window. This loss of sunlight reacts unfavorably on the general health of the occupants of the building and since it is necessary to use artificial light all the time, the strain on the eyes of the persons in such buildings is severe and results in many forms of human ills, which of course, decreases the efficiency of these persons as producers.

There is also the cost and maintenance of light and the inferior product resulting to be added to the economic wastes chargeable to high buildings. The air in the streets, courts and yards which are flanked by high buildings into which but little direct sunlight can shine is, according to the best authorities, injurious to health, since the sun's rays have the power of purifying the air as nothing else can.

In the modern high tenements we have another class of evils due to abnormal domestic conditions, and when those who toil in the high commercial building, as is frequently the case, are compelled to live in high tenements, it seems to me we have created a condition of life which is doubly destructive to the progress of the human race.

Students of high buildings have placed much emphasis on the fire hazard created by these buildings, and while it is an important feature and should be considered, it is in my judgment not so important an objection to them as has generally been contended. It is true that the fire departments cannot reach a fire which is more than 80 or 90 feet above the street except by the use of a stand pipe, but the danger from fires in office buildings is very small and can be almost eliminated by the use of fireproof material in their construction and the proper protection of wall and vertical openings by fireproof windows and doors.

The financial side of this question deserves a word. The testimony given before the New York Commission demonstrated that the skyscraper was not a good paying investment. While it is true that one such building standing alone will pay, since it can get its light and air from the surrounding property, yet when other buildings are around it and it has lost this advantage, then its renting value decreases accordingly. In the last analysis, high buildings beget high land values, land values which are speculative in nature, and it remains to be proven that such land values are a benefit to the community.

Improving Concrete by Rodding

By F. E. GIESECKE*

IN a series of tests made at the University of Texas to determine the physical properties of dense concrete as determined by the relative quantity of cement, described in Bulletin No. 1815, published March 10, 1918, only sufficient mixing water was used to secure a concrete of workable consistency.

For comparison, however, a few specimens were prepared with an excess of water which produced a very considerable reduction in strength as shown in Fig. 8 of that bulletin.

In practical operation it is almost absolutely necessary to use enough excess water to make the concrete sufficiently fluid to be handled in wheel-barrows, carriages, or tubes, and so that it will flow readily into the forms, and between and around the reinforcing steel.

With these facts before us—that an excess of water must be used to place the concrete correctly and economically, and that this excess water materially reduces the strength of the concrete—the question naturally arises what, if anything, can be done to repair the injury to the concrete by the excess water.

To answer this question Mr. G. A. Parkinson, Assistant Testing Engineer, University of Texas, made a number of experiments in the fall and winter of 1917, to determine the effect of removing the excess water from the concrete after the latter had been deposited in the forms.

In these experiments the excess water was removed by forcing a pointed iron rod into the concrete while the latter was still soft; the effect of running such a rod into the concrete is to permit the excess water and entrapped air to escape upward, and to compact the aggregate; as a result the density of the concrete is increased about 4%.

This method of treating concrete has been named "rodding"; it is quite similar to "spading", but differs materially from "tamping".

The results of Mr. Parkinson's early work were so very satisfactory that an extended series of tests was begun in June 1918, and this followed by other series of tests, as new phases of this method of treating concrete developed.

Some of these tests are still incomplete; but considerable important data have been secured and the following will be of interest.

Fig. 1 shows graphically the ultimate unit compressive strengths of fifty-four 6″x12″ cylinders. The concrete had the following composition:

Material	Percentage
Cement	14.40
Passing 35-mesh sieve	4.35
Passing 12-mesh sieve and retained on 35-mesh sieve	9.00
Passing ¼-inch sieve and retained on 12-mesh sieve	13.00
Passing ¾-inch sieve and retained on ¼-inch sieve	29.50
Passing 1¼-inch sieve and retained on ¾-inch sieve	29.75
	100.00
Water	10.00

The fifty-four cylinders were divided into three groups of eighteen cylinders each. In each group one cylinder was not rodded, the re-

* Professor of Architectural Engineering and Head, Division of Engineering, the University of Texas.

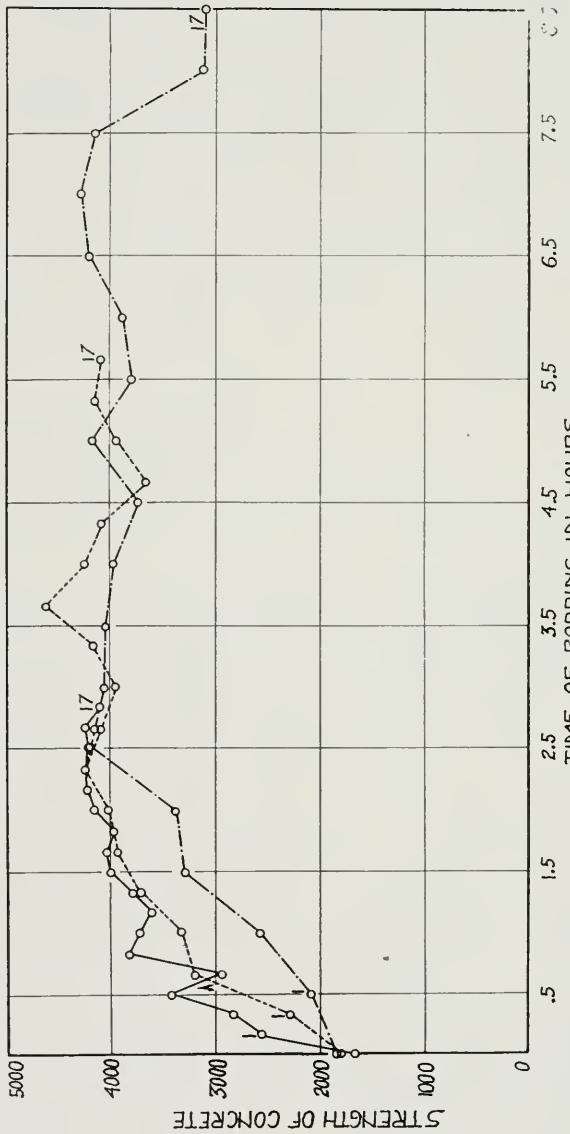

STRENGTH OF CONCRETE
5000
4000
3000
2000
1000
0
.5
1.5
2.5
3.5
4.5
5.5
6.5
7.5
TIME OF RODDING IN HOURS.
17
17
17

Fig. 1

maining seventeen were rodded from one to seventeen times. In one group a ten-minute interval was allowed between roddings; in another a 20-minute interval; and in the third group a 30-minute interval. The first rodding was applied soon after the moulds were filled, i. e. without waiting for the full interval of time assigned the particular series to pass. By one rodding is to be understood the pushing of a pointed iron rod into the concrete to the full depth of the concrete, once for every surface area of about three square inches, i. e. about ten times for a 6″ cylinder.

It is interesting to note:

A. That the maximum strength is about 130% more than that of the unrodded specimens.

B. That all three series acquired their maximum strength in about 2 or 2½ hours.

C. That for the 30-minute interval it required 5 roddings; for the 20-minute interval, 7 roddings; and for the 10-minute interval, 14 roddings to secure the maximum strength.

It is probable that the length of time and the number of roddings necessary to secure the maximum strength vary with the temperature and with the percentages of cement and water.

Fig. 2 shows graphically by the broken lines the average ultimate unit compressive strengths of thirty-six 6″x12″ cylinders arranged in twelve groups of three cylinders each.

The intermediate group, represented by crosses within circles, was made of concrete having the same composition as that represented in Fig. 1; but the mixing water was 7% for three cylinders, 8% for three, 9% for three, and 10% for three. This concrete contains cement at the rate of about six sacks of cement per cubic yard of concrete.

The two other groups are of similar composition, but the cement content changed to about four and eight sacks respectively per cubic yard. The percentages of water for the lean mixes were the same as for the intermediate, but for the rich mixes they were increased, respectively, to 7½, 8½, 9½, and 10½ per cent.

To compare these results with the strength of plain concrete, the work of the Lewis Institute of Chicago, as reported by Prof. Abrams was selected as being probably the latest and most reliable, and probably also the most appropriate, since it gave special attention to the effect of excess water on the strength of the resulting concrete.

According to the Lewis Institute tests the strength of concrete is a function of the ratio of the volumes of water to that of the cement used in the production of the concrete and is $14{,}000 \div 7^{x}$ pounds per square inch for concrete 28 days old, ^{x} being the ratio referred to, and the weight of one cubic foot of cement being assumed as 94 pounds. (Eng. News-Record, Vol. 80, p. 873). The curved line shows the strength of the twelve groups of specimens as calculated by this formula.

An inspection of Fig. 2 shows:

A. That the effect of rodding concrete is more beneficial with lean than with rich mixes and that it is more beneficial with wet than with dry mixes.

B. That the average strength of 8-sack concrete can be increased about 45% by rodding; that of 6-sack about 60%, and that of 4-sack about 220%.

To appreciate how well the values shown in Fig. 1 (determined by test July 11, 1919), check with those shown by the broken line in Fig.

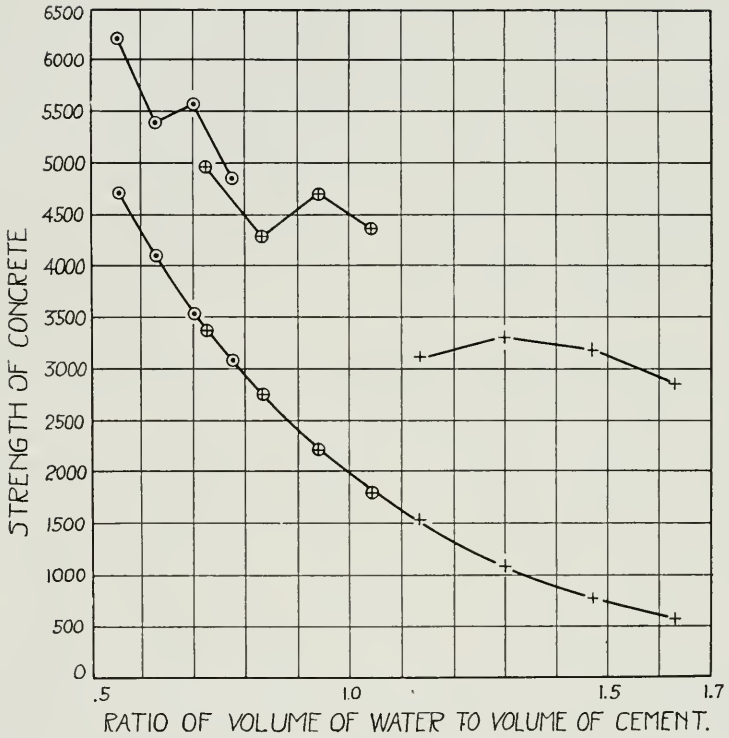


Fig. 2

2 (determined by test March 19, 1919) and with those shown by the curved line in Fig. 2 (calculated from the Lewis Institute formula) notice that the average strength of the unrodded specimens shown in Fig. 1 is about 1800 pounds, and that this is almost exactly the same as that shown by the curved line in Fig. 2 for the six-sack concrete with 10% of water, also that the strength shown by Fig. 1 increases gradually with the roddings to about 4,250 pounds, which is a trifle less than that shown by the broken line in Fig. 2 for the six-sack concrete with 10% of water.

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WAGES can be raised temporarily by legislation or by the shock tactics of a group of men whose services for the moment are essential. But no individual or company can be forced to employ people at a loss, and there is evident danger of unemployment on a large scale if workmen put too high a value on their services. There remains the one hopeful way, by increasing production, care being taken that the increased product is well distributed. It must be remembered that skill of management is limited and the best results cannot be universally obtained. At the same time on the side of labor there must be no waste of productive power, but plant and machinery must be put to their maximum use.—L. F. Loree, president Delaware & Hudson Company.

Cost Plus Plan for Contractors

By A. E. WELLS*

IF a half dozen street urchins are caught by a burly representative of the law while engaged in the pastime of shooting craps, the law against gambling acts. Law makers have recognized that gambling is an unnecessary evil and have, so far as possible, put a stop to it.

Yet an owner and a contractor can gamble with a million times the stake of the street urchins without fear of the law and it is done constantly under the guise of the lump-sum contract.

For under its terms the contractor agrees that for a certain sum of money he will guarantee the owner against all the unknown conditions involved in putting up a structure. Whether he makes his figured profit or whether he loses so heavily as to be put out of business rests partly on his ability to figure costs but largely on his luck in failing to meet those conditions which would increase costs.

Both parties to this contract stand to gain or lose. If the job costs 20 per cent more than estimated the owner gains to the other's loss. If conditions make considerable saving possible, then the contractor gains to the owner's loss.

Many contractors who in times past have built extensively in your field are no longer operating. Others have taken their place. Perhaps the majority of the missing firms are those who were expected not only to build according to specifications and within the time limit but to gamble that their costs would fall within a fixed contract price. Gambling against variables such as the forces of nature and the conditions of labor—they lost. In many cases their failure involved an added investment on the part of the owner or possibly the surety company. It is certain that no one gained through the failure.

The contractor is an expert retained to assemble certain materials into a finished structure. The question being asked today is "should the contractor insure the owner that his structure will not exceed a definite contract price." In competitive bidding the cost of this insurance is paid generally by the low bidder out of profits or, as frequently happens, out of his capital, for the reason that he is more likely to get the contract as he scales down his allowance for contingencies. In fact the man whose bid includes a safe allowance for insurance against higher costs cannot expect to obtain work under the competitive bidding system. The inevitable result is the bankruptcy of many contractors and an additional cost to the owner or the surety company to complete the unfinished contract. This situation has come to such a point that surety companies are refusing to write surety bonds on fixed price contracts except under specially favorable conditions and frequently recommend to owners the cost-plus-fixed-fee contract.

But from the owner's standpoint is it not preferable to know in advance what a certain project will cost? It is true that a careful estimate is due him. It should be made by a reliable contractor and checked by owner's architect and engineer. Such a figure should be more satisfactory than a competitive bid which does not necessarily show the cost of the building but only what some contractor is willing to gamble is the cost of the job.

An issue of bonds for an office building or other structure can as well be based upon a careful preliminary estimate in either case. It can only run below the estimate under the cost-plus-fixed-fee plan. Is not the owner entitled to the possible saving?

* President Wells Bros. Construction Company, Chicago, Ill.

Additional financing may be an unfortunate necessity but is there reason why the contractor should be asked to underwrite the accident of greater cost?

At the Chicago meeting of the Associated General Contractors of America, November 21, 1918, this topic was discussed and Brigadier-General R. C. Marshall, Jr., chief of the construction division of the U. S. War Department, pointed out the fault of the usual pre-war basis of contract. He showed the impossibility on recent War Department work of asking for competitive bids, because speed was the essence and detailed plans and specifications were never complete at the time when construction must start. On such work it was, therefore, out of the question for a contractor to bid on a flat contract price basis. It would not have been fair to either side. As a result there was developed a form of contract known as the cost-plus-sliding-scale-fee contract.

General Marshall said that early in the spring of 1918, the program of work before the construction division was so extensive that it seemed advisable to have the merits of this form of contract again passed upon and a committee of eminent business men unqualifiedly endorsed this form of contract. In General Marshall's own words at the convention of general contractors:

"No contractor should be called upon nor permitted to undertake the performance of any contract that within the four corners of the paper upon which it appears is, or may be written the financial bankruptcy of the contractor. It is unjust, it is inequitable, it is uneconomic. The great lesson of this war on the subject of the relationship between the contractor and the owner is the cost-plus contract. This represents the only equitable basis under which a contractor may perform constructive and economic services for the owner. It is the only form of contract which affords protection to both parties. To me all the energies, the thought and the experience of this country within its own continental lines during the past year and one-half of this world struggle shall have been in vain unless out of it shall grow, as a permanent institution, solidifying the economic relationship between the contractor and owner, the cost-plus contract."

We have been operating under this plan almost exclusively for several years. We know that it is possible to convince most business men of the perfect fairness of the cost-plus contract and among our clients are several who would be the last to tie themselves up with us on any basis of contract likely to be unfair or dangerous. We have built on this basis for Montgomery Ward & Co., four successive times; for the Robert Simpson Co., Ltd., Toronto, five separate buildings and for the William Davies Company, Ltd., Toronto, six buildings. For these firms we have been able to start actual construction much earlier than otherwise would have been possible, which means early occupancy. The reason for this is that we can start the foundations just as quickly as the foundation plans are complete and further design and construction may go on co-incidently.

Money tied up during construction earns nothing until the building is ready for occupancy and the interest often amounts to a considerable sum. When we have opportunity to work with the owner, architect and engineer from the very inception of plans and when we begin foundations as soon as the general contour of the building and equipment are determined upon, we are able materially to cut down the period during which the owner's capital is unproductive. Under the lump-sum contract it is necessary that the plans be complete before bids are taken which may delay occupancy for months and without occupancy a building investment is poor as a dividend producer.

But while speed is of first importance in most building contracts, yet fairness to both parties is an equally good reason for its general adoption and on that basis our company is now operating almost exclusively. We feel that the owner should reap any benefit we are able to bring about. To give us incentive to make such savings we ask a moderate percentage of that saving under the estimated cost. Our standard contract calls for a return to the owner of 90% of such savings, all of which would have accrued wholly to the contractor under the lump-sum plan. We believe 10% of the savings to be an adequate incentive for the contractor. We have almost invariably made savings for the owner below the estimated cost on our cost-plus contracts and such savings have not been through the padding of preliminary estimates but through changes or economics in construction made with the consent of owner, architect and engineer, which produced either a structure more adaptable to its purpose or of lower cost with equal value. Such changes could be made only with difficulty under the lump-sum contract as the average owner is averse to changing original specifications because of the generally high cost of "extras" or divergence from the original basis of bidding.

The cost-plus-fixed-fee basis has been adopted for the major manufacturing and merchandising operations. Automobile makers do not gamble with a fixed price but from season to season vary their selling prices according as costs rise or fall. There is less of general price advertising than before the war and now many standard articles of commerce, once fixed as to price like the Ingersoll Dollar Watch, are today on a new basis and tomorrow may be higher or lower according as costs dictate.

Unquestionably the contractor is called in because he is an expert in building and not to absorb the risk entailed in the lump-sum contract. If it is not the purpose of the owner to buy price insurance along with his building then cost-plus-fixed-fee is a better basis.

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President Woodrow Wilson Says:

WE ARE face to face with a situation which is more likely to affect the happiness and prosperity, and even the life, of our people than the war itself. We have now got to do nothing less than bring our industries and our labor back to a normal basis after the greatest upheaval known to history, and the winter just ahead of us may bring suffering infinitely greater than the war brought upon us if we blunder or fail in the process. An admirable spirit of self-sacrifice, of patriotic devotion, and of community action guided and inspired us while the fighting was on. We shall need all these now, and need them in a heightened degree, if we are to accomplish the first tasks of peace. They are more difficult than the tasks of war, more complex, less easily understood, and require more intelligence, patience and sobriety. We mobilized our man power for the fighting; let us now mobilize our brain power and our consciences for the reconstruction. If we fail, it will mean national disaster. The primary step is to increase production and facilitate transportation, so as to make up for the destruction wrought by the war, the terrible scarcities it created, and as soon as possible to relieve our people of the cruel burden of high prices. Only by keeping the cost of production on its present level, by increasing production and by rigid economy and saving on the part of the people can we hope for large decreases in the burdensome cost of living which now weighs us down.

The Popular Bungalow-Court Idea

By CHARLES ALMA BYERS in Building Age.

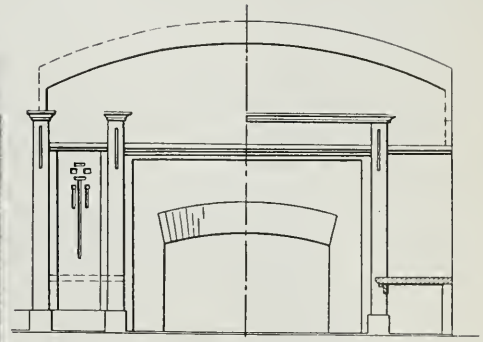
ST. FRANCIS COURT, PASADENA
S. B. Marston, Architect

THE bungalow or community-court idea, commonly so termed, virtually had its inception in California about ten years ago, and it is rapidly meeting with favorable recognition throughout the country. This new idea in the building of apartments, for such it is, as a marked departure from the old-style apartment house, seems to be, for several reasons, particularly commendable, and builders are finding it as affording a means of very profitable investment. Of course, owing to the seeming necessary congestion of the "close-in" sections of our cities of today, and the consequent high price of property in such localities, the community court is more especially adaptable to suburban and other residential districts, for it is a scheme that requires a much larger plot of ground in proportion to its housing possibilities than does the old-fashioned apartment house. For this reason also, and because it affords more privacy and freedom and makes living in the open air more inviting, it is particularly popular in resort cities, and even more especially so in the warmer climates, such as Southern California.

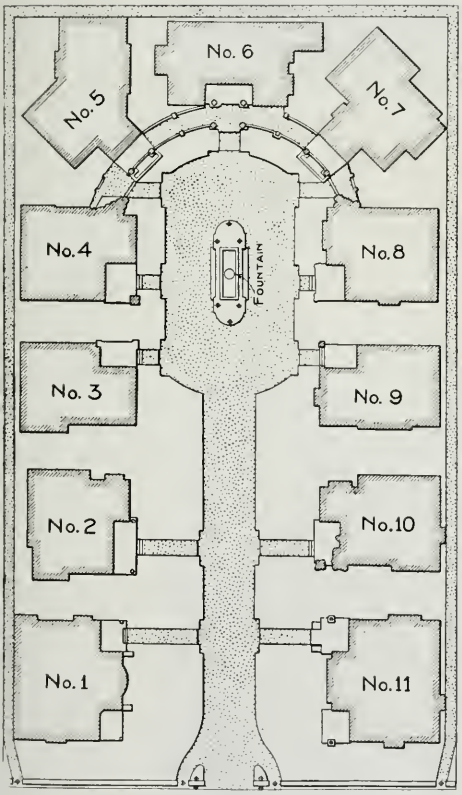
The community court consists of a group of small individual cottages or bungalows built around a sort of common court or parking scheme. It requires a plot of ground equivalent to several fair-sized city lots, probably comprising a combined area of at least something like 120 by 180 feet in size. A plot of these dimensions will allow ample space for the erection of about nine houses. This width is considered invariably sufficient, and even 100 feet will do, but the greater the depth the better. A row of houses is erected along each side with a court or park running through the center, toward which all of the houses are arranged to face.

COLONIAL COURT, LOS ANGELES

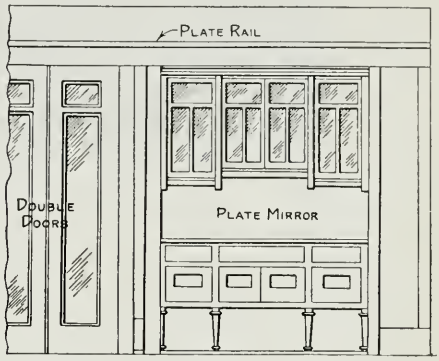
Usually the entrance to the court from the street is more or less elaborate and attractive, and from it will probably lead an



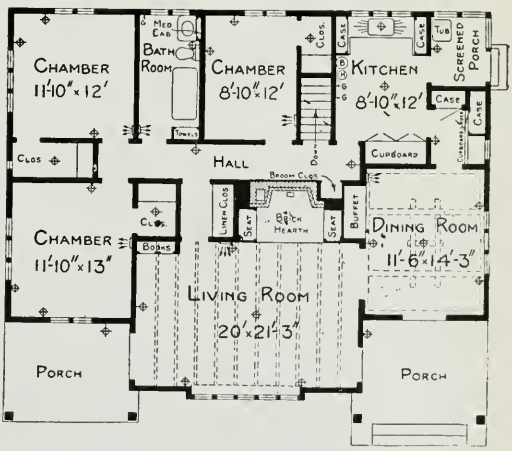
The Living Room Ingle Nook—Scale ¼ In. to the Foot



Block Plan Showing Lay Out of Court and Position of Various Cottages



Elevation of Buffet in Dining Room—Scale ¼ In. to the Foot



Floor Plan of House Indicated on Lot No. 11—Scale 1/16 In. to the Foot.

ST. FRANCIS BUNGALOW COURT, PASADENA
S. B. MARSTON, ARCHITECT

BUNGALOW, SOUTHERN CALIFORNIA

BUNGALOW, SOUTHERN CALIFORNIA

BUNGALOW COURT, LOS ANGELES

automobile driveway, with a walk on each side, down the center toward the rear of the plot. Ornamental electroliers are commonly set at intervals, to light up the place at night, and sometimes a fountain or other garden feature is worked into the plan. The lawns are kept in excellent condition, and there is always a very pretty arrangement of trees and shrubbery. Often there are garages built in the rear of the space for the use of the tenants, and in a few instances a club or summer house is included in the general scheme.

Each house, usually only one story in height, is a complete little home within itself, and is entirely independent of the others, except in its claim upon the court space and its accessories. In many of the courts the houses contain but three or four rooms, but in some cases a few of them may possess as many as six rooms, besides the bath room. In the three-room houses there will be a combined living and dining room, a bed room and a kitchen; in the four-room ones the living room and dining room will be separate, and in the houses possessing five or six rooms the additional rooms will usually be bed rooms. The little houses are invariably of pleasing and attractive architecture, and it is preferable that no two should be exactly alike in design. This not only makes the whole court more attractive in

COLONIAL BUNGALOW, LOS ANGELES

appearance, but enables the possible tenant to exercise a choice of style. The houses are artistically finished inside, and are frequently completely furnished by the owner.

The court illustrated by the accompanying pictures and plans, known as the St. Francis Court, is located in Pasadena, California, and was designed by Mr. Sylvanus B. Marston, an architect of that city, with offices in the Chamber of Commerce building. The Frank G. Hogan Company of Pasadena is the owner. It is an excellent representation of the idea, and the whole arrangement is most artistic. There is an imposing entrance, consisting of low street walls and massive gateway pillars, constructed of large boulders and cobblestones and filigreed with red brick. Each of the two main pillars has two lantern-like lighting fixtures, one on the street side and the other on the court side. At the farther end of the court the automobile driveway circles a very artistic fountain arrangement, with stationary seats, the whole being designed to correspond with the entrance.

This court has a street frontage of 175 feet and is approximately 300 feet deep. It contains eleven very pretty one-story bungalows, of various sizes, styles and colors. Some of them have shingled outside walls, and some are weatherboarded; many possess masonry work of brick, and in a few instances either concrete or cobblestones is used. All of them have front porches—some of them two—and a brick or cement walk connects each house with the automobile driveway. Five of the bungalows have six rooms each, four of them five each, and the other two four rooms each. No two bungalows are exactly alike in design, and all of them are of particularly attractive architecture.

Each house constitutes a cozy and comfortable individual home. It is artistically finished and decorated inside and possesses many built-in conveniences. In the living room is always found an excellent fireplace, and in some of the smaller houses this room also contains a disappearing bed. In some cases this bed is so arranged that it can be used either on the inside or rolled out and used on the porch, and when not in use it occupies the space under two stationary seats—one on the inside and one on the porch.

In order to convey a clearer idea of the size and arrangement of these little court homes, the floor plan of one of the six-room bungalows is reproduced herewith. It will be observed that the rather large living room contains a fireplace with a brick mantel and hearth, located in a sort of inglenook, as well as a small built-in book case. The dining room has a fine buffet, the kitchen contains numerous cupboards and other conveniences, and each of the three bed rooms has a roomy closet. The rooms are conveniently connected by a small hallway, and from this hallway a stairway leads into the small basement. The ceilings of the living room and dining room are beamed and the floors are of oak. The two bed rooms at the left have pine trim and oak floors, while pine trim and pine floors are used in the remaining rooms. All the principal rooms have sand finish plaster.

This particular bungalow is one of the largest in the court, but all of the others are nevertheless charming homes. This one is also heated from a furnace, but some of the smaller ones are not.

The bungalows rent from $35 to $55 each per month. This includes free water and the use of all community features. The grounds are taken care of by the owner's attendant, and are therefore always kept in excellent condition, without labor or expense on the part of the tenant. In fact, the tenants enjoy all of the services and conveniences of the modern old-style apartment house, besides more privacy and purer outdoor air.

The average cost of constructing each of these eleven bungalows was about $1,800*, which included its proportion of the court work, such as the fountain, the entrance features, the walks, and so forth. This, of course, does not include the cost of the ground. Furnishing the houses cost on an average about $300 additional for each. This means that the entire court, exclusive of the ground plot, represents a total expenditure of approximately $23,100, while the gross income from the investment is in the neighborhood of $475 per month.

Little houses arranged in this manner are always in demand, and vacancies for any considerable period of time are very rare. Because of the attractiveness of the whole arrangement, each house, by sharing equally with the others therein, has its own individual charm greatly enhanced. It also not only possesses all of the conveniences of the average apartment house, but is shut off from the street, and therefore affords much more privacy than the ordinary cottage or bungalow.

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Time-saving Method of Finding Right Column in Large Tables

Finding the right columns on tables containing computed weights, measures, and costs of material in a manufacturing plant required nearly as much time as would be consumed in figuring the extensions that were being sought, an auditor discovered. The tables were so large that rulers had to be used to find both the horizontal and vertical columns. A 50 per cent reduction in time has been afforded, writes Mr. A. H. Dusser in System, by pasting the tables on large cylindrical rollers fastened in a box, or holder, with convenient cranks for revolving them. The first column of figures at the left and the first line across the top represent, for instance, inches. To get the number of square inches in a sheet of metal 19 by 23 in., the computer turns the cylinder to the figure 19 and the required number of square feet is found immediately over the figure 23 on a strip of blue print paper containing the same figures as the top row, which is pasted under the glass top parallel with the cylinder.

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Hollow Building Tile Growing in Favor

Hollow building tile, in common with other structural products, decreased in quantity and value in 1918, says the Geological Survey, but its decrease in value was smaller than the decrease in the value of any other structural materials except fancy brick and enameled brick, which are minor products. The output in 1918 was 1,964,000 tons, valued at $12,980,000, which, when compared with that in 1917, 2,590,028 tons, valued at $13,255,433, shows a decrease of 626,000 tons, or 24 per cent, in quantity, and of $275,000, or 2 per cent, in value. Hollow building tile was used by the government in large quantities in 1918 and its greatly increased use in the future seems assured, as it is not only desirable material for use in partitions and floors in large buildings in a city, but for use in dwellings, barns, silos, and other buildings in the country.

* Since this article was written, building costs have nearly doubled and there has also been a corresponding increase in rentals.

Failure of Santa Monica Municipal Pier

SANTA Monica's reinforced concrete municipal pier, the first of its type erected on the Pacific Coast, has been declared by engineers to be unsafe and Commissioner of Public Works W. H. Carter has ordered it closed to the public. The pier was built in 1908 and 1909. It is 1600 ft. in length and cost $100,000. For a number of years it withstood the stress of storms and heavy seas so well that the city's dream of a permanent pier appeared to have been realized. Recently, however, it has shown the effects of repeated battering by derelict wooden piles dashed against it by the surf and evidences of damage from other causes.

On August 17th last, a section of the deck about 20 feet in length, sank about a foot under the weight of crowds waiting to visit ships of the Pacific fleet anchored off shore. An examination of the pier was immediately ordered by the city commission and Messrs. Quinton, Code & Hill, Leeds & Barnard, and Olmsted & Gilleleln, consulting engineers of Los Angeles were engaged to examine the structure, report upon its condition and the causes, and make recommendations as to what should be done. This investigation is still in progress but preliminary information given to the commission warranted the precautionary measures which have been taken. Whether it will be possible to repair the pier satisfactorily or whether it must be rebuilt cannot be determined until the final report of the engineers is made.

Investigation has disclosed a serious disintegration of the piles and pronounced fracture of the superstructure at the shore end and at various points along the full length of the pier. Many of the piles have cracked all along the lines of reinforcement, and in some instances large pieces of the piles have been spawled off. Six piles have failed and disappeared and allowed the deck to collapse to a degree. The piles, each weighing five tons, were originally cast and sunk into the sea to form the supporting structure for the pier. By many engineers it was regarded at the time as a very doubtful experiment. There was much controversy over the ultimate action of sea water on the concrete. Many instances were recalled, where the concrete had disintegrated, particularly above the low water mark. For the pier length alone, not taking into consideration the additional piles for the platforms, some 240 of these reinforced concrete piles were used. They were cast on inclined planes.

Describing the process of construction, the Southwest Contractor of Los Angeles, under date of June 20, 1908, said:

"The piles are cast in lengths of thirty-six to thirty-eight feet, the reinforcing rods being allowed to extend above the concrete, for the piles must be built up ten or more feet after they are sunk to solid bottom. Six ¾-inch rods are used for reinforcing; in the center of the pile is placed a 2-inch pipe through which water is forced as the pile is sunk, the heavy jet boring a hole in the sand and gravel for the pile. The base of each pile is enlarged to form a bulb, designed to give the pile a firm foundation after the sand has washed in around it.

"In mixing the materials, tested Portland cement is used in proportions of one to six of coarse gravel and broken stone: the gravel is taken from the ocean bed and washed as clean of sand as possible.

"After the pile is properly cast and ready for sinking it is carried to position, bulb down on the sand surface; connection is made between the center pipe and the pump, which furnishes a force of 180 pounds to the inch and 300 gallons of water per second. A pipe similar to the one in the center, is sunk free beside the pile; it is a very simple matter, after the

pump is started, to remove the sand and gravel from underneath the base, and even stones measuring eighteen to twenty inches in diameter. So great is the pressure that only ten minutes is required under ordinary circumstances to place the pile in permanent position.

"As the pile sinks, the free jet is revolved around it; should a boulder be encountered too large for removal the pile goes no deeper. Under the contract, the contractor must sink the pile to a depth of twenty feet unless firm bottom is reached at a less depth; but he is allowed extra for each additional foot over twenty feet. Each pile is sunk under the direct supervision of an inspector appointed by the city. This inspector makes a record of the number of feet the pile sinks and he determines when a proper foundation is reached.

"Three piles are sunk abreast, laterally, at a distance of twelve feet apart; between each lateral row, longitudinally, is left a distance of twenty feet. After the piles are built up to the required height, the shoulders are constructed and then the 30-foot girders are molded; from girder to girder run three 18-inch struts. When complete, the entire sub-structure is a monolithic mass. It was originally intended to use 14-inch piles, without protection, for the first 500 feet of pier, 18-inch for the next 500 feet, and 22-inch for the remainder out to the end, where the water has a depth of 30 feet. But on account of the dangerous driftage not uncommon during severe storms, it has been decided to put iron casings on all the smaller piles nearer the shore. The wooden piers in the vicinity are constantly breaking to pieces, furnishing driftage that acts as huge battering rams with the force of a heavy surf.

"The piles are sunk in varying depths of water; at the end of the pier where the water depth is thirty feet, the pile length will approximate forty to fifty feet, for an average of fifteen to eighteen feet of sand must be pierced before a firm foundation is found on which to rest the pile."

Engineers and all other persons interested in reinforced concrete construction will eagerly await the experts' report on the causes for this condition of the pier. Undoubtedly the piles have been damaged to a serious extent by timbers floating in the surf.

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The Concrete Floor

Concrete is largely used as a floor material for garages, factories and mills, and gives a surface easily cleaned and impervious to water.

There is, however, one serious objection to this type of floor. When the floor is subjected to wear, there is a tendency toward the "dusting off" of the cement particles, and these particles floating about in the air are injurious to the health of employes and a menace to the working parts of delicate machinery.

The use of a proper protective coating, however, will readily overcome this objection. First see that the floor is perfectly dry and then apply a brush coat of concrete floor first coater. This will seal up the pores and stop the suction. Allow this coating to dry twenty-four hours and follow with two brush coats of concrete floor paint, allowing forty-eight hours for drying between coats.

If the floor is subjected to unusual wear, a final coat of good floor varnish will add materially to the appearance and durability.—Exchange.

PROPOSED BRIDGE SPANNING THE GOLDEN GATE
M. M. O'Shaughnessy, C. E.

Spanning the Golden Gate with a Steel Suspension Bridge

LEADING bridge engineers of the country are preparing a report for the San Francisco Board of Supervisors and the Northern California Highway Association on the feasibility of bridging the Golden Gate, thereby linking San Francisco and Marin county and reducing the travel time to the North Bay Counties by thirty-five or forty minutes.

Actively identified with the plan is the Northern California Highway Association, a new organization formed at Santa Rosa a few weeks ago. Among its members are representatives of the counties of San Francisco, Marin, Sonoma, Mendocino and Sacramento, and its primary function is to obtain better service into and out of San Francisco for automobiles.

Mr. M. M. O'Shaughnessy, city engineer of San Francisco, decided to ask one of the great bridge building authorities of the United States to furnish his office with an expert report on the feasibility of constructing a suspension bridge across the Golden Gate, together with an estimate of the cost.

The necessary data is now being assembled by the city engineer, and the latter in this work is being assisted by the charts and other records of the Golden Gate in the local Federal office of the Coast and Geodetic Survey.

Facts now in the hands of the engineers show that at depth of sixty-two feet on the Marin county side of the Golden Gate there is a solid rock foundation. On the San Francisco side, opposite the Presidio reservation, and near Fort Scott, there is a solid foundation at a depth of forty feet. The middle of the channel has a depth of 318 feet.

The distance across the channel from Fort Scott would seem to warrant a suspension bridge of three spans, with a total length of 73820 feet.

The first span from each side would be 200 feet above the water, with towers on either side, each 600 feet high, to support the suspension cables

of the bridge. The high topography on both shores will materially aid in proper land approaches to the proposed structure.

The San Francisco end of the bridge approach might have to be at some point on Van Ness avenue after leading through and from the Presidio.

On the Marin side the approach may probably be three miles long, running through Sausalito and also through the military reservation tunnels.

Colonel E. Evelyn Winslow, U. S. Engineers, who is in charge of the local offices of the river, harbor and fortification branch of the War Department, will be the man to make a report on the permissibility of bridging the Golden Gate.

City Engineer O'Shaughnessy says the cost will depend upon whether the bridge is intended for motor vehicle travel and electric street cars only. If steam railroad traffic is included the cost will be greater. Mr. O'Shaughnessy's estimate for motor vehicle travel is $15,000,000.

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The Timber Supply

WITH the addition of the present growth of new timber at the annual rate of approximately 20 billion feet, there is now standing in the United States enough timber to secure a supply of raw material for the lumber industry for over 150 years, according to the Secretary Manager of the National Lumber Manufacturers Association. He adds that the excess of exports over imports may somewhat increase the annual drain upon our forests but thinks it exceedingly doubtful whether the total domestic consumption will, much if any, exceed today's figure, which is less than 33 billion feet a year.

Because lumber production is below normal and stocks are low, many persons make the mistake of supposing that the timber resources of the country are fast failing and that they must look about for some substitute material for wood.

With the diminishing of the timber supply is the not less important fact that not so large a supply as formerly will probably be needed in the future, as standards of wood utilization and methods of living change and demands vary in different generations.

Before worrying over a timber famine and demanding that more trees should be planted, public and private interests should both look to the conserving of the timber resources they now possess. There should be more adequate public protection from fire and insects, and private care in preventing animals from uprooting seedlings and in not injuring trees by turpentining and similar processes.

* * *

Forest Fires in the Northwest

From 1400 to 1800 fire fighters have been making Spokane their headquarters in their efforts to stamp out the forest fires in western Montana, northern Idaho and eastern Washington. Plenty of rain is the only thing that can put an effective end to the present forest fire situation is the statement of the Government forest fire recruiting office at Spokane.

Three thousand acres in the Coeur d'Alene national forest in northern Idaho have been burned over. The Mission Creek fire which rain extinguished destroyed 200,000,000 feet of timber on the Canadian side with great loss to American as well as Canadian lumber interests and many acres of valuable timber have been destroyed in eastern Washington.

Underpinning a Six-Story Iron, Glass and Brick Wall

THE six-story business building at 836 Broadway, New York, has a 45-ft. front supported on cast iron columns carrying brick walls and plenty of windows in the upper stories and plate glass store fronts in the first story, besides supporting a portion of the floors that are used for office and general business purposes.

The five wall columns were seated on piers with three-course rubble stone footings on fine dry sand a little below the floor of the basement and sidewalk vault which latter extended out under the street to the subway excavation, carried down a number of feet below the footings and so close to them that the inclination of the line from the base of the footings to the bottom of the excavation was much steeper than the natural slope of the material, thus causing the latter to become unstable and threatening the undermining and collapse of the old foundations had the excavation been made before properly safeguarding them.

The building was not new, the quality and condition of the super-structure was not known to be perfect, and the footings so far as could be determined, were of ordinary character of unknown strength and stability, and likely to have imperfections that might make any disturbance of the soil below them produce displacement or increase stresses that would be dangerous.

The building was fully occupied and it was necessary to avoid any interference with the business or the tenants and to avoid any obstruction in the street, on the sidewalk, or in the upper part of the building. It was also necessary to do all of the requisite work without entering the building except in the immediate vicinity of the old foundations and to do it in such a way as not to interfere with the subway work or with the installations that might exist in the basement or with the tenants there. All of this had to be done and the building, no matter how precarious its condition might prove to be when the examination was made, had to be maintained in security during operations and finally to be left unimpaired in a safe and reliable condition after the completion of the subway. The methods of carrying out the work under these conditions is described in "Contracting," from which this article is taken.

Under these conditions and requirements the Underpinning and Foundation Company, the contractor for the work, first made a careful survey of the entire front portion of the building with record measurements and photographs, examined the wall columns, and footings as carefully as possible, and concluded to strengthen and extend the footings so as to greatly increase their strength and reliability without disturbing them or impairing their stability during the operation.

To accomplish this the five separate footings of the front wall piers were consolidated by building around them a steel and concrete structure that enclosed them on all sides and formed a heavy continuous footing of at least double the combined areas of the original footings and extended across the entire front of the building from side wall to side wall, and was so thoroughly interlocked with the old footings that no portion of the latter could be displaced without breaking or moving the entire long wide slab.

This really amounted to transforming the isolated footings into a wide flat beam with abundant bearing surface on the sand so that the unit pressure on the latter was greatly reduced and the stability of the structure it supported correspondingly increased, thus permitting without danger considerable variations in the distribution of the load or the removal of

direct support under some portions of the new footing without danger of unduly straining or displacing other portions.

This was accomplished without in any way disturbing the support or impairing the strength of the original footings and after it had been achieved minimum excavations were very carefully made under the new footing so as to disturb it as little as possible and in them small piers were successively carried down to rock, well below subgrade of the subway excavation, and after these were completed the weights of the extended new footing and its load of columns and superstructure were gradually transferred to the new piers until they were largely or wholly taken off from the surface of the sand and carried down to rock, making the original structure and the new piers entirely independent of the stability of the soil and permitting the subway excavation to be made regardless of any displacement that might occur in the sand, which only required to be backfilled if necessary to secure the required finish after the completion of the work.

Access was obtained to the front part of the basement, a temporary partition was erected just in the rear of the front wall columns, and the operations of the contractor were confined to the space in front of this partition, including the old sidewalk vault area.

Before the subway excavation was carried to an elevation below that of the basement floor and while the stability of the old foundations had not yet been jeopardized, the basement floor was removed adjacent to and between the column piers and on their centre line a trench 8 ft. wide was excavated across the full width of the building and carried down through the sand and earth to the bottom of the old footings, care being taken not to disturb them in any way except to expose the tops and sides for inspection.

In the bottom of the trench 15-in. I-beams from about 6 to 8 ft. long, were set parallel to the building line and arranged in pairs on opposite sides of each old footing, the bottom stones of which were trimmed slightly if necessary to enable them to bear against the webs of the I-beams, and to permit the top and bottom flanges of the I-beams to project beyond the faces of the footing stones.

As these beams were not quite in line the projecting ends were allowed to overlap at the same or at different elevations. In one place a second tier of I-beams was seated on the ends of two adjacent sets forming a sort of splice for them and engaging the upper courses of the footing stones.

The short I-beams at right angles to the first were set in pairs so as to engage the remaining opposite faces of the floor footing stones, thus enclosing each footing in a rectangular framework of I-beams. The second set of I-beams was braced by short longitudinal beams on the centre line of columns that took bearing against the I-beams' webs and were wedged in position, the other beams being wired securely so that together they form a substantial gridiron or skeleton framework enclosing and connecting the old footings and extending continuously from side wall to side wall.

The space between and around the I-beams and old footings was then concreted, completely filling the trench and forming with the I-beams a broad, shallow reinforced girder, thoroughly connected to the old footings that were included in it.

This new footing was capable of resisting heavy bending moments, shear and compression, and served to distribute the weight of the wall and its load over a largely extended surface, on which correspondingly decreased unit loads were imposed.

On each side of the new footing there was located opposite the centre line of each column a 4-ft. rectangle with one of its diagonals coincident

with the edge of the footing. At each of these points a pit 4 ft. sq. was excavated to a depth of about 4 ft., one-half of the area being under the footing and the other half outside of it. Care was taken not to excavate any two adjacent pits simultaneously and as they were excavated the sides were very carefully sheeted with special horizontal boards, called louvre boards, made and used under the goldsborough patent. These boards were placed from the top down, as the excavation proceeded, bracing each other firmly at the ends so that no intermediate struts were required.

Between the boards of successive courses there were narrow horizontal clearances and the edges of the boards were bevelled in such a way as to give access to the earth behind the boards without permitting any material amount of the flowing sand to escape. This arrangement facilitated inspection of the soil at all times and permitted earth, clay, sand or even concrete to be tamped through the openings so to make good any bleeding from the exterior and to fill any cavities that might be encountered. This almost entirely prevented any loss of material from the adjacent ground and enabled the excavation to be made with very little movement of the soil outside the pits.

In each of eight pits there was driven on the diagonal of the pit and as close to the inner corner as possible a 12-in. sectional steel pile made of short lengths of very heavy pipe that was forced down to bearing on rock a foot or two below subgrade of the subway by the Breuchaud process of powerful jacks reacting against the I-beams in the extended footing and through them to the super-imposed weight of the building. As the piles were sunk they were cleaned out, and when they were completely driven the interior was examined by electric light and the piles were filled with concrete. In each of the two centre pits two piles were driven and concreted in the same manner.

After the piles were concreted, the pits were also concreted nearly up to the bottom of the footing, which was wedged against the pit concrete, and the wedges driven until the desired proportion of the load on the footing was transmitted to the new foundation, after which the space between the top of the pier concrete and the footing was grouted, thus providing continuous support for the piers and footing, and carrying their loads down to solid bearing below the limits of subway excavation.

The trench below the vault floor was back filled, the floor replaced, the basement partition removed and the work completed one month after its commencement, although it was done intermittently and the men shifted to other work when interrupted on this. The work involved about 32 yds. of excavation and the same amount of concreting, and required 2 tons of I-beams and 131 ft. of piles.

* * *

Fair Profits

The contractor who asks a price which covers the cost of his work, with a reasonable profit added, and including his overhead expenses, meets with success and gains the respect of his fellow men; whereas the price-cutter soon falls by the wayside because he will be unable promptly and properly to meet his financial obligations, and because, in his endeavor to come out even, he will reduce the quality of his work wherever possible. He therefore naturally loses his self-respect and the dignity of a servant to the people.—Painter's and Decorator's Journal.

To Stop Elevator Accidents

FAILURE of safety-devices on elevators, especially of safety-catches and air-cushions, is held responsible for elevator accidents by the writer of an article on the subject in The Universal Engineer (New York). While believing that the elevator business is in competent hands, and that the conditions of service are as fully met in our best elevators as in any widely employed contrivance of man, this writer asserts that there is still room for improvement. The occasional maiming, or the still rarer killing, of a human being painfully assures us, he says, that the elevator is not absolutely safe, and leaves it open to suggestion and criticism from all who are interested. He goes on:

"The accidents which occur should not be smoothed over, or made light of, by any specious excuses. It may tend to reassure the passengers, to tell them that the accidents seldom occur in regular passenger service. Most of the killed or injured are in some way out of place or are doing something improper in connection with the elevator or its appurtenances.

"So-called freight-elevators are far more dangerous to life and limb than passenger-elevators. The knowledge of these facts does not restore life nor reset broken legs. An accident of the same severity, if preventable, is equally to be guarded against wherever it may occur. Almost invariably, after the fact, the accident is shown to have been preventable.

"There are various classes of elevator accidents, but the most characteristic and most serious, and that which we here have particularly in mind, is the dropping of the cage. Of course, sufficient cable strength is always provided; still cables will break or let go, and then the safety-devices come into play.

"It may be worth while to inquire whether the duty assigned to the safety-catches, or the relation of their expected action to the regular operation of the elevator, is altogether the correct one. The safety-catch is normally inoperative and is designed to be put in operation by and for the emergency. Why should not these devices be rather normally operative instead of inoperative, so that, so to speak, their permission must first be secured by appropriate action before the elevator moves at all? The safety-catches should be always on, and instantly efficient, except where they are deliberately, purposely, and temporarily released to allow the cage to move.

"The catches, clamps, or brakes which are operated by a centrifugal governor may be theoretically all that could be desired, but in several instances they have demonstrated their practical inefficiency by failing to act at all or not until a dangerous drop was accomplished. This may have been due to improper adjustment, but, if so, there should have been, and there should always be, some means of assurance as to that adjustment.

"The air-cushion at the bottom of the elevator-shaft has repeatedly demonstrated its value as a saving device, and it would seem that it should be more generally, if not universally, employed. There is to be said for it, besides its efficiency when the emergency occurs, that it is always ready for business and can scarcely be rendered inoperative except by deliberate intention.

"As to freight-elevators, it may almost be said that there are none. Men will ride when they can ride, and it is the fact that they do ride. The elevator-runner usually rides in any case, so that practically every elevator is a passenger-elevator. A notice conspicuously posted, warning all persons that they ride at their own risk, may relieve a proprietor of legal responsibility, but it still leaves the moral responsibility intact.

"It is not easy to see why a freight-elevator should not be required to be made as safe as a passenger-elevator. Certainly, in view of the fatalities

which are constantly occurring with factory and storehouse elevators, they are not as safe as they should be.

"The safety-catches usually applied to freight-elevators provide that if the cable breaks close to the carriage the dogs will be thrown out to engage in the racks at the side of the shaft. To demonstrate the reliability of the catches, it is quite common to attach the cable temporarily to the carriage by a piece of rope, to haul the carriage with a good load on it up to the top of the shaft, and cut the rope. Of course the catches work, the carriage does not drop, and the safety of the elevator is assumed.

"As a matter of fact, the cable has a persistent habit of not letting go in that way. If the cable breaks, as it usually does, much nearer the drum, if the drum gets loose on the shaft, if the teeth break out of a gear, or if something of that kind happens, the cariage may drop to very nearly full speed, while the drag of the cable will still be sufficient to overcome the springs and hold the dogs in.

"Air-cushions at the bottom of elevator-shafts are constructed by making the lower part of the shaft air-tight. When a falling car drops into this pocket the air below acts as a cushion and the stop is made gradual by the escape of air in the same way as in the familiar pneumatic door-check. A car has been dropt 130 feet into one of these air-cushions, and those who took the drop emerged from the car smiling and without a scratch. To quote further:

"A well-known expert on elevator construction speaks of the air-cushion as follows:

"'The air-cushion should consist mainly in the proper enclosure at the base of any elevator-shaft and in the ratio of one foot of enclosure for every seven feet of travel of the car. . . . .

"'Many persons believe that the only thing to be considered is sufficient strength. This is a mistake, for as fast as the air has been comprest to a certain point it must be released and should never be compelled to bear more than two and a half times the load in its normal condition. . . . The air at the bottom of the shaft must be displaced or the elevator could never reach the bottom. . . . .

"'The car, after striking the air, would rebound and ascend with nearly the same speed that it came down. . . . . If, on the other hand, a compression-chamber is constructed with its proper valve escape graduated from the top of the air-cushion and growing less as it runs down, there would be a constantly increasing resistance as it advances. By this process the entire length of the air-cushion is utilized to break the fall.'"

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Labor in the Lumber Industry

The shortage and inefficiency of labor is everywhere felt in the lumber industry. Not only strikes in the mills and camps themselves but unsettled transportation facilities caused by threatened railroad strikes and other labor difficulties are potent causes of low lumber production. Labor is scarce in many sections and worse than this, producers say it is almost impossible to get men to turn out as much work today as they did a year or two ago. In some quarters it is a rare thing for a number of men to remain in one mill for a long period. Dissatisfaction over the merest trifle is taken as an excuse for quitting and the employer is helpless. Because of these labor difficulties and other high cost of production, some mills are not very active and this, at a time when greater production is everywhere urged and needed, is a deplorable fact. In some southern sections the labor situation is reported as easing up but the class of labor is practically nowhere as good as it was before the war.

Heating a Building with Waste Air

THAT warm air generally allowed to go to waste may be profitably used in heating a large building is clearly shown by tests made at the State Hospital in Chicago, Ill., as described by the supervising engineer, Mr. F. J. Postel, in the Heating and Ventilating Magazine. The air used in the test was that from the tunnel through which the steampipes passed from the central heating plant. Where a group of buildings is supplied with steam and hot water from a central plant, Mr. Postel reminds us, the usual method is to carry the pipes in service tunnels. Even though the piping is properly covered the temperature of such tunnels is more frequently over than under 100° Fahr., especially as the size and number of steam pipes increase. He goes on:

"The tunnels are generally near the surface; in fact, the concrete tunnel roof frequently serves as a sidewalk between the buildings. Under these conditions, it naturally follows that the heat lost by transmission through the walls, and especially through the roof of the tunnel, is considerable. The best visual evidence of this is the melted snow outlining the location of a tunnel system, even in very cold weather.

"With a view of determining the feasibility of utilizing some of the waste heat of a tunnel system in heating and ventilating buildings, the following experiment was made:

"At the Chicago State Hospital there is quite an elaborate system of tunnels connecting the various buildings on the grounds. The south end of this tunnel system is new and at present contains only a high-pressure steam line and a heating return line, the other service piping not having been installed as yet. The temperature in this new tunnel is, therefore, considerably lower than that in the remainder of the tunnel system and is undoubtedly lower than the average temperature usually found in tunnel systems. However, due to the fact that one of the newer buildings served by this tunnel had a blast system already installed and that it was a comparatively simple matter to arrange the fan to draw its air supply from the tunnel instead of from outdoors, we selected this building for the test. . . . . .

"The building is designed to house about one hundred patients. There are a large dormitory and a day-room on the first floor and two dormitories on the second floor. The solarium at the south end of the building and the toilet rooms, attendants' rooms, and the single rooms in the center of the building are heated by direct radiation, while the day-rooms and dormitories are equipped with a blast system, in addition to direct radiation. The blast system has not been used for several years, the day-rooms and dormitories being heated entirely by direct radiation and ventilated by open windows. In the test the direct radiation of the day-rooms and dormitories was shut off entirely and the rooms heated by the blast system alone. The air was discharged into the room just as it was drawn from the tunnels, without reheating.

"As the object of this test was primarily to determine how hot the rooms would get under certain outside temperature conditions and with a certain drop in tunnel temperature, no attempt was made to regulate the temperatures. . . . .

"All the air used in the test was heated from the outdoor temperature by passing into the tunnel at the skylight and through the tunnel to the building, absorbing heat from the tunnel walls and pipe and from the exposed tank and piping in the basement of the building. . . . . .

"The introduction of tunnel air into the rooms resulted in a material increase in humidity. This may be accounted for by the moisture absorbed by the air in passing over the damp tunnel walls and by the steam escaping from expansion joints in the steam line, which probably were not absolutely tight. . . . . .

"The tests show that the air conditions were quite satisfactory, especially considering the condition of the tunnel and the rather crude method of getting the air from the tunnel to the fan inlet. . . . . .

"The test proved conclusively:

"1. That it is entirely practical to heat and ventilate buildings with waste heat from a tunnel system.

"2. That with even a small amount of hot piping in a tunnel system insulated in the usual way, there is still sufficient waste heat to make its utilization well worth while.

"3. That if the tunnels are kept reasonably clean, the air conditions in the rooms may be maintained at a high standard of purity.

"It follows that as the temperature of the tunnels is decreased by this method, the heat loss through the tunnel walls and roof is decreased proportionately, and to this extent it represents a direct saving.

"Carrying this plan to its logical conclusion, it would appear that the limit to which we may safely go is reached only when the temperature of the tunnel gets down near the freezing-point. . . . . The heat transmission through tunnel walls and roof is a direct measure of the heat wasted and this becomes a minor waste if the tunnel temperature is, let us say, 40° Fahr.

"What this saving may amount to in the larger institutions is shown by the fact that, based on the results of the above test, plans are now being made to heat four buildings similar to the one used for this test at the Chicago State Hospital."

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Concrete Flagpole Poured in Place

The unique construction of a 70′ concrete flagpole in front of the Ancon Hospital Group at Ancon, Canal Zone, is described in the Engineering News-Record. In order to avoid the placing of complicated reinforcing steel to take the handling strains as well as the strains after erection, and the cost of erecting, it was decided to pour the pole in place. Stability was secured by using an enlarged base, which extended 10′ into the ground. The pole is 17″ in diameter at the base and 8½″ in diameter at the top. It is reinforced longitudinally with eight square bars decreasing in size from 1¼″ at the base to ½″ at the top, and also has circular or hoop steel. The complete ratio of steel to concrete at the base is 0.055.

In its construction a light tower similar to a hoisting tower was first erected, and the forms for the pole, which were made of wood in eight sections, were erected inside this tower. The forms were fastened to the latter after having been plumbed by the use of two transits at right angles to each other. The steel was erected for the entire pole at one time, but the forms were only placed at the rate of one section per day. These were made in longitudinal halves, and were placed about the steel, and then filled with concrete with buckets. The mix used was a 1:1½:3, and a float finish coat was applied immediately after the forms were removed. The pole proved to be satisfactory both in cost and appearance.

Why Engineers Were in Charge of War Time Emergency Building Construction

IN England the greater part of the wartime emergency building construction was carried out by engineers. In an article in the July Journal Mr. Robert Atkinson, headmaster of the School of the Architectural Association, London, ascribes the failure of architects to handle this work to their defective system of education which resulted in blindness and conservatism. Extracts from the article follow:

For a profession which for untold years had plowed its peaceful and only too well-worn furrow, to be suddenly transformed into a more or less useful branch of a conscriptive national machine under stress of war conditions, is a trial which only a homogeneous mass would be expected to survive—and with what result! The immediate requirement of great numbers of temporary buildings, hutting for camps, hospitals, depots, works, sheds, and the like, all to be erected in the quickest possible time from the stocks of materials available, presented problems in which organization and ingenuity in using the materials, or inventing new materials, played a much more important part than the designing or drawings which usually occupy the architect's time. The work needed to be executed in close touch with manufacturers or their engineers, in the fitting in of machinery, and needed also great knowledge of the working capabilities of materials so that economy might be carried to its greatest possible limit; in fact, the work approached almost as closely to the engineering as to the architectural side, not counting the great powers of organization necessary to avoid delay.

There arose at once a clamor for trained men of sufficient capacity and virility to jump into strange places and to tackle new problems as they developed, a chance, one would have thought, for the architect, yet with very few exceptions it was the engineer and not the architect who filled the breach. The architect proved to be hidebound to a degree, incapable of hustle, and lacking in fertility; the engineer, on the contrary, proved to be more practical, more energetic, more receptive, and a sufficiently good draughtsman for the occasion.

As a matter of fact, the life of the nation depended not a little upon its munition buildings and the housing of its workers. So enormous were the demands that existing buildings utterly failed to keep pace, and the architect, at first so indispensable, latterly so ignored, in failing to keep his place suffered the usual law of the elimination of the unfitted. What was the cause of such a debacle?

Now architects are just as patriotic as men in other sections of public life, and the rank and file were at the front before the need for their services was perceived at the rear; once lost in the maze of millions, their recall became difficult. Left—the middle-aged men and the crocks—it is cold comfort to think that had the vitality of the younger members been pitted against the young or old engineers, the result would have been different. (And, personally, I believe that the profession contains as much good material as any other.) As it is, a scapegoat must be found—the deficiency can, it is said, only have been the result of a defective system of education. The engineers, by their system of education, their scientific methods, their elimination of temperament and of sentiment, their constant experiments with new methods, with new materials, have kept alive the spark of evolution. Within their field they have constantly progressed, thus keeping the faculties of their students

on the alert, with the result that they were found ready to undertake new methods with a fair chance of success. Well, then, let it be called the fault of the education of the architect, but, this being agreed, it would perhaps be as well to point out that it is not very logical to blame the education of the present for the defects of men educated 20, 30 or 40 years in the past, unless it be taken for granted that no changes in system have occured during the intervening period, an assumption which I am afraid is very likely to occur, a defect in outlook which is consistent with the primary causes of the failure. What are the defects of our educational system? In the past they have been just those things which with cumulative effect have broken down under the strain of evolution, "blindness and conservatism."

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Payment for Estimating

AS a part of its plan for a thorough study of payment for estimating and the development of a fair and practical policy with reference to this important subject, the Associated General Contractors of America have invited representatives of the American Institute of Architects and the Engineering Council to meet in a joint conference soon. The following letter, which was sent to Mr. J. Parke Channing, chairman of Engineering Council, as well as to Mr. Kimball, is self explanatory:

Mr. Thomas R. Kimball, President,
American Institute of Architects,
Omaha, Nebraska.

Dear Mr. Kimball:

The wide-spread interest which has been aroused in "Payment for Estimating" and the methods which have been adopted in many cities to establish such a policy, have been frequently called to the attention of the Associated General Contractors of America. Accordingly, the Committee on Methods of the Association is making a careful investigation of the subject in order to determine what policy should be adopted by reputable contractors.

Joint Conference Needed

A great difference of opinion regarding the matter seems to exist among contractors, engineers and architects throughout the country, for the subject is one which closely affects the practice of each of them. In order, therefore, to arrive at a conclusion which represents the best thought of all three principals, the Associated General Contractors invite the American Institute of Architects to appoint three delegates to a joint conference with the A. G. C. and the Engineering Council to be held in Chicago as soon as possible to consider the subject.

In connection with the problem, your attention is called to the statements regarding it which appear in the September issue of our official Journal, a copy of which I am sending you separately.

If the suggestion for a conference impresses you favorably, I should be glad to receive an early reply giving the names of the three delegates who will represent your Society and the date which you would suggest as most convenient for them to meet in Chicago to discuss the problem.

Very truly yours,
(Signed) G. W. Buchholz, Secretary.

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New Heat Insulating Material

A new heat insulating material, composed of a mixture of a special clay and cork, has been discovered by a Norwegian engineer. The clay and cork mixture is burnt, and the result is the formation of a very light substance that is said to be eminently suitable for all heat insulating purposes.

How to Plant Trees Along Highways

THE movement recently launched for the planting of trees along highways in commemoration of the men who lost their lives in the war has aroused considerable discussion among nurserymen, who are advocating for the benefit of engineers, contractors and the public alike, methods of planning that will insure success to the scheme.

In sections of the country where the soil is loose or sandy, no special precautions need be taken in the planting of the trees, the nurserymen say, but where the roadside is of hard soil or where the nature of the pavement indicates that part of the natural moisture will be kept from the roots of the tree, then special methods should be employed.

The first rule to be followed, according to the nurserymen, is to plant the tree far enough from the roadside to give it an opportunity of getting some moisture from the direction of the road, if the pavement be hard surface. Second, put down stakes where the trees are to stand. Then with a soil auger or pointed steel bar, using a sledge or maul if necessary, put down a bore hole which would be about 1¾ or 2 in. in diameter and about 30 in. deep.

In each bore hole place a half cartridge of Red Cross Extra 20% dynamite or any other dynamite of equal strength, into which a No. 6 blasting cap and length of fuse long enough to reach about 2 in. out of the top of the bore hole has been inserted. Tamp the charge in well with damp clay, loam or sand. Light the fuse and retire to a safe distance.

Following the blast, dig out the hole, being careful to locate and fill the cavity at the bottom. Fill in the hole with subsoil up to within about 3 in. of the point where the roots are to rest. Fill in that 3 in. and all around the roots with rich top soil. If the soil is poor, place some manure or other suitable fertilizer in the bottom of the hole. Be careful not to permit the fertilizer to come in direct contact with the roots.

When the hole has been completely filled, tramp the soil down firmly around the tree. If the soil be dry, it is well to pour water on it to give the tree a good start and to settle the soil around the roots.

Ambitious plants have been made by the exponents of highway tree-planting and as the movement spreads it probably will gain sufficient impetus to command universal attention. The fact that returned soldiers from France have seen how the idea works out in that country is counted upon to gain ready approval. Therefore, any information on proper planting undoubtedly will be received with favor.

Engineers and contractors particularly will be interested for practical as well as aesthetic and sentimental reasons, as it is known that the protection afforded from the sun by foliage prolongs the life of a highway several years.—The Road Maker.

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Steel Reinforced Pavements

The California Highway Commission is building stretches of the State highway in San Joaquin County over adobe soil in accordance with specifications requiring the concrete pavement to be increased in thickness to from four to five inches, reinforced every eighteen inches with three-eighths inch steel bars.

Housing the Houseless

By CHARLES E. WHITE, JR.

COST of building is higher than it ever was before and yet in many communities there has been more building the past summer than has been recorded in any previous year. Contractors who haven't done a stitch of work in two years report they are working night and day—working nights figuring jobs and working days building them. The hum of the building industry is continuous and the same hammering and sawing that prevailed in summer days before the war is apparent now.

Somebody is paying the price for building and somebody is getting the money, but who?

Material men claim they are not making a more-than-usual profit; the different trades say they are not getting it; contractors certainly are not participating in undue profits, if we are to judge by the low percentage they are figuring in their bids.

Who gets the money? Somebody gets it, for the owner is certainly paying more for his building than ever before. Probably it is the mechanic who benefits most by the higher cost of building. His wages are much higher in all lines, both in the construction end as well as in the line of production of building materials.

Here is what is happening in most sections of the country. The experiences in one town are pretty much the same in every other. An owner decides to build a home (for it is in housing that there is the most activity just now, as every contractor knows). He has his plans and specifications made and gives them out for bids. Though warned by his architect that prices are high, he has, in his zeal, caused plans to be drawn for a bigger house than he is entitled to for present market prices.

"Make the living room fourteen by twenty-eight," he has told his architect, "with four good-sized bedrooms and a couple of bathrooms on the second floor."

"You can't do it for seven thousand," advises the architect.

"Oh, yes you can," insists the owner, "McAdam is building a seven-thousand-dollar house, and if he can do it, I can" (he guesses).

So plans are drawn for a house with cement foundations, iron columns for supporting the first floor, two big living rooms with a brick fireplace and a good-sized dining room and butler's pantry.

Plumbing is of the best, and electric outlets are scatterel liberally throughout the rooms. The roof is shingled with composition shingles and the outside walls are plastered with cement-plaster, rough cast.

To bring the house up to the grade desired by the owner, the architect specifies plate glass in all prominent windows, enameled paint throughout the interior, cement steps at the front and rear entrances, and there are several tile floors, to say nothing of built-in cabinets and bookcases.

What happens when the bid comes in?

Of course the inevitable happens. Bids run all the way from eighty-five hundred to ten thousand dollars, and the owner goes up in the air.

Then there is dickering with the lowest bidder. Every contractor hates to lose a job, so they figure and figure and allow themselves to be squeezed a little here and there, clip their profit a little bit more and finally get down to the owner's figures.

Now comes the tug of war. No builder can possibly make a profit on the job except by the utmost of efficiency. There isn't five dollars leeway

one way or the other and if he wants to make even a small profit he must watch the job keenly, and lay out the work for his men so that every particle of waste in either labor or material will be stripped away.

"Many builders will get stung in 1919," prophesied an architect to the writer a few days ago. "In their eagerness to get work they have not only figured low, but at the last minute when the owner wavered between going ahead or quitting, they made a further reduction, and must trust to luck that they will get out of it with a profit."

The owner is up against this proposition: He is confronted with an increased cost of building, from twenty-five to fifty per cent. more than four years ago, but his income has not increased in the same proportion. So, naturally, he dickers with the builders and beats them down as much as possible.

It is the contractor's foreman who can save the day for him. If he has a good foreman who has brains enough to cut out waste, and energy enough to see that all work is done expeditiously and economically, he may hope to finish the job with a profit.

* * * *

When the boss goes on the job and finds several mechanics standing about waiting for others to complete a task or get out of the way, he is sure something is wrong with the machine. Men don't have to be shoved at top speed all the time to get a good day's work out of them, but they certainly should not be permitted to stand around and wait for anything. No matter what building operation is going on a mechanic standing idle is a mechanic too many on that particular job; he should be transferred to some other part of the work where he will have plenty of room to keep busy.

Lots of money is lost by having too many men on a job. There should be just enough to do the job speedily. Any excess over this is waste. If two men can carry a plank you should not permit four men, and if one man can carry it don't use two.

There are many chances for leaks in house building. Houses are small and the work is more puttering than in commercial buildings, flat buildings or stores. But you must look out and not let your men putter over trival work. Even though honestly trying to do the job in your interest to best advantage, men often lose time for their employer simply because they don't use their heads.

If you go on a job and find your foreman standing around watching the men work, he isn't the man for the job. A foreman, when he isn't measuring or planning ahead, should be right at work with his men. There is no more important man on the job, and no man who has more to do, or who should keep more busy.—National Builder.

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* *

Why She Would

"What would your mother say, little boy," demanded the passer-by virtuously, "if she could hear you swear like that?"

"She'd be tickled to death if she could hear it," answered the bad little boy.

"Why, how?" asked the lady, shocked.

"Why?" exclaimed the boy, "because she's stone deaf!"

Contractor Loses Suit to Recover Sum in Excess of Contract

"If we must sustain plunder and theft, it should be done with tears and regret," writes Justice James F. Robinson of North Dakota, in a dissenting opinion, in which he strenuously disagrees with the conclusion of his associates on the supreme court bench. While acknowledging that Mr. Carl Bartelson gave the city of Portal a perfect school building worth $30,000, he cannot collect any sum in excess of $24,000, which was the amount for which his contract called, and which the city cannot exceed without running over the constitutional 5-mill school levy.

Bartelson, the contractor, according to newspaper reports, brought suit in district court asking that he be permitted to collect rentals from a portion of the Portal high school building until the $6,000, which he held to be due him, was repaid. The district court found for Bartelson. The Portal high school district appealed, and the supreme court, in an opinion written by Judge Bronson, reverses and remands the action and orders it dismissed.

In dissenting, Justice Robinson says:

"No opinion of the court should ever be written with the appearance of cynical indifference to the cause of right and justice. The city is old enough and rich enough to be honest and to give unto Caesar what is Caesar's."

* * *

Painters' Wages in England

A London correspondent of the Painter and Decorator writes:

"The building industry is still far from active, although more workers are coming into employment. Painters were very busy during Easter and for that period in London their wages reached the highest point ever paid or thought of in this country for painters' labor—75 cents per hour. That was double the ordinary rates and the ordinary rates are high nowadays in comparison with old ideas. The general movement has been to force the ordinary rate up to 36 cents per hour, the London scale has been 40 cents per hour. The highest figure in the province is 38 cents, and that is in Yorkshire. Painters' laborers usually receive 32 cents per hour. The old employers in the trade hold up their hands in absolute horror at things of this sort and wonder what the world is coming to.

"Hours are being standardized all over the country though there are still variations. In many parts of the country painters now work a 50-hour week for 44 weeks of the year and a 48-hour week for the remaining period. In some localities, however, the regular week has been reduced to 46½ hours, which is the lowest figure on record so far except in one case, where the working week from February to the end of October will be 47 hours and for the rest of the year 44 hours."—American Paint Journal.

* * *

Perhaps His Name Was Bill

Oh, contractor, come build my house,
Come, build and build and build.
Alas he came and built my house
And billed and billed and billed.

—Architecture and Construction.

The Up-to-Date Drafting Room

By ROBERT W. SHELMIRE, in Engineering and Contracting

FEW realize the progress which drafting has made in the last generation. Even in engineering circles the work does not receive proper consideration. Thirty years ago the drafting and construction work went hand-in-hand. In other words, the designing and planning was not nearly so important a function as it is today. Projects now are thought out, designed and planned in every detail and carefully estimated before proceeding with construction. This is why drafting, which is, properly speaking, engineering, has become such a highly developed art, requiring an immense amount of technical knowledge and practical experience.

Drafting is not a trade as it was so considered years ago, because it is not physical labor so much as it is mental. Therefore drafting is actually a profession, regardless of the fact that practically all draftsmen are employed and not in business for themselves. The profession of drafting should not be separated from engineering because it is the engineering profession just as much as is the work of construction. It is unfortunate that the relation of drafting to engineering is not better understood by engineers and draftsmen and the public. It is a great mistake for any one to think that drafting is a menial occupation or is the unimportant part of engineering. Drafting, considered as a whole, is the most important part of engineering, for it is in the preparation of the design and detail drawings that the economy of the whole scheme or structure is determined. It is the work in the drafting-room that decides the success or failure of most all enginering projects.

In order then to correct the misunderstanding and avoid the existing confusion regarding the draftsman and his work, the word, draftsman, and drafting-room, had better be eliminated. Every one recognizes a designer or capable draftsman as being an engineer, so why not call them engineers? Likewise the drafting-room, the engineering department? As it usually is so styled in most all correspondence. This to me seems the only way to bring order out of chaos and unity of thought and purpose among engineers and draftsmen.

There is considerable discontent in the various drafting-rooms throughout the country which has been brought about partly through this inclination to separate the draftsman from the engineer and partly on account of low salaries of draftsmen as compared to laborers and tradesmen. Certainly it is an unstable condition when the man who possesses the intelligence and ability to design and construct a machine receives a compensation frequently much less than the man who merely operates the machine. Employers are striving to eliminate the causes of unrest among their workmen and this is one which must be considered and remedied or else these men through their various organizations, societies or unions which are now developing, will bring it forcibly to their attention. Employers must do their part to make the work of their employees interesting, and salaries are not the only thing in which draftsmen are interested.

The drafting-room must, first of all, have the very best system of lighting and this should be determined in each particular case by an expert in illumination. Frequently drawings are made which require working to 1/100 in., therefore it is highly important that these men have the very best lights to avoid eye strain.

Good drafting tables should be provided and other accommodations for the men who are doing this very important work. There seems to be a desire all too frequently to economize on the drafting-room equipment, hence so

many common board tables on wooden horses, which is a great mistake. The saving made in the furniture and fittings is lost many times over through the discontent of the workman. Special instruments and labor saving devices are sometimes the means of considerable economy.

For general use in an office, where there is a demand for such instruments, a pantograph, plainimeter, parallel rule, a set of ship curves, a calculating machine, etc., etc., are well worth the expense. In fact a drafting-room not equipped with these instruments and particularly with drafting machines, is about as up-to-date as a large shop without automatic cutting machines or an oxy-acetylene welding outfit.

Draftsmen are too close to the executives for the latter to allow a condition of unrest or discontent to prevail. Their loyalty on the whole is without question and since their work is so close to the office safe, so to speak, it is necessary that harmony exist between the executives and the engineering department. Otherwise the unrest may take the form of I. W. W.ism or Bolshevism, which means nothing less than the destruction of all organized industry and government.

Draftsmen must do their share of the work of putting drafting on a plane commensurate with the dignity it deserves, which is equal in every way to that which engineering enjoys. There is entirely too much criticism among draftsmen. Criticism of another's work is quite out of place unless it comes in line with one's duty and then it must conform with what is right and just. A great amount of time is spent by some draftsmen in talking about the various "jobs" they have held and petty treatment received. If this talk was properly directed towards raising the standard of the profession, instead of lowering the dignity of the work it would on the other hand proportionately raise it. "Jobs" and "wages" must be superseded by "position" and "salaries." Avoid the employment agency, as many of the best companies will not take men from any agency which is in business for profit. Join some engineering society which offers this service or use the U. S. Employment Bureau.

Draftsmen should mix up more with other people and not live such narrow lives, confined by the four walls of the drafting-room. To make yourself known and your work understood does not mean to be domineering or arrogant. The dignity of engineering will be better preserved by being modest, but the economic status is not raised by hiding your light under a bushel.

* * *

Vibration Problems in Industrial Buildings

ONE of the least studied of the many industrial problems is the effect of vibration in factory buildings. In the technical publications little has been published that covers in any comprehensive manner the vibrationary problems in industrial establishments, but what little has been done, however, in studying the subject has indicated the importance that is attached to the elimination of disturbing vibrationary influences. Factory buildings, on account of the machines operating in them, are peculiarly susceptible to vibration, which, by acting on the nervous susceptibilities of the workers, causes reduced efficiency, poorer work, and slower speed.

Two sources of vibration may be apparent—internal or external. Vibration from internal sources results from the motions of machines or equipment, which may be transmitted to the floor and walls of the structure, while externally caused vibration is produced from sources entirely outside

Present Cost of Building Materials

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, October 20, 1919. All prices f. o. b. San Francisco.

Note.—For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $34.00 per 1000 laid.
Face, $80.00 per 1000 laid.
Common, f. o. b. cars, $15.00.
Face, f. o. b. cars, $47.50.
Terra Cotta Tile Partitions—
12x12x2 in., 18c. per square foot
12x12x3 in., 21c. per square foot.
12x12x4 in., 25c. per square foot.
12x12x6 in., 30c. per square foot.
Hod carriers, $7.00 per day.
Bricklayers, $9.00 per day.

Composition Floors—30c. per sq. ft.

Concrete Work (material at bunkers)—

No. 3 rock	$2.00 per yd.
No. 4 rock	2.10 per yd.
Niles pea gravel	2.10 per yd.
Niles gravel	2.10 per yd.
Niles top gravel	2.00 per yd.
City gravel	1.75 per yd.
River sand	1.25 per yd.
Bank sand	.75 per yd.
Monterey sand	60c. per sack
Cement (F. O. B. cars)	$3.03 per bbl.

Rebate for sacks, 15c. each.

Medusa cement	9.50 per bbl.
Forms	$60.00 per M

Wage—

Laborers	$6.00 per day
Concrete workers	7.00 per day
Cement finishers	8.00 per day

Dampproofing—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

Electric Wiring—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies.

Excavation—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

Glass—
21 ounce, 25c. per square foot.
Plate, 80c. to $1.25 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
WAGE—Glaziers, $8.00 per day.

Lumber—
Common (at building), $51.00 per 1000.
Flooring—

1x3 No. 1	$98.00 per 1000
1x3 No. 2	90.00 per 1000
1x4 No. 1	88.00 per 1000
1x4 No. 2	85.00 per 1000
1x4 No. 3	78.00 per 1000
1x6 No. 1	93.00 per 1000
1x6 No. 2	90.00 per 1000
1¼x4 and 6 No. 1	93.00 per 1000
1¼x4 and 6 No. 2	88.00 per 1000
Slash grain, 1x4 No. 1	72.00 per 1000

Shingles—

Redwood, No. 1	1.40 per bdle.
No. 2	1.30 per bdle.
Red cedar	1.75 per bdle.

(Add cartage to above)

Hardwood Lumber—	Per ft.
1" FAS Ash	20c.
1" FAS Birch	17½c.
1" FAS Southern Red Gum	17½c.
1" FAS Jenisero (Genezero)	16½c.
1" FAS Hawaiian Koa	24c.
1" FAS Mahogany	35c.
1" FAS Maple	17c.
1" FAS Plain Oak	20c.
1" FAS Quartered Oak	30c.
1" FAS Walnut	35c.

(Above quotations at yard.)

Hardwood Floors—
Maple floor (laid and finished), 28c. per foot.
Factory grade floors (laid and finished), 24c. per foot.
Oak (quartered, finished), 35c. per foot.
Oak (clear), 30c. per foot.
Oak (select), 28c. per foot.
WAGE—Floor layers, $9.00 per day.

Wybro Veneered Panels—
24x60 in., ¼ in., 3-ply, 1 side. .. Per ft.

Ash	19½c.
Hungarian Ash	29¼c.

Birch ..... 19½c.
Curly Birch ..... 28½c.
Elm ..... 18c.
Jenisero (Genezero) ..... 28½c.
Southern Red Gum ..... 22½c.
Qtd. Southern Red Gum ..... 28½c.
Hawaiian Koa ..... 29¼c.
Maple ..... 18c.
Birdseye Maple ..... 34½c.
Mahogany ..... 28½c.
Oregon Pine ..... 14¾c.
Plain Oak ..... 22½c.
Quartered Oak ..... 28½c.
Walnut ..... 28½c.
Wybro Board ..... 9¾c.

Millwork—
O. P., $120.00 per 1000.
R. W., $120.00 per 1000.

Labor—
Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
Double hung box frame windows (average) with trim ..... $9.50 each
Doors, including trim (single panel) ..... 9.00 each
Doors, including trim (five panel) ..... 7.50 each
Screen doors ..... 4.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchens and pantries, seven feet high, per lineal foot 8.00
Dining room cases same price, if not too elaborate.
Flag poles, per foot 1.50
Base, picture mould, moulding, etc. ..... $120.00 per M
WAGE—Laborers, $6.00 per day.
Carpenters, $8.00 per day.

Marble—
Columbia ..... $1.50 sq. ft.
Alaska ..... 1.50 sq. ft.
Tennessee ..... 1.75 sq. ft.
Verde Antique ..... 3.00 sq. ft.

Painting—
Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

Patent Chimneys—
6-inch ..... $1.50 lineal foot
8-inch ..... 1.75 lineal foot
10-inch ..... 2.25 lineal foot
12-inch ..... 3.00 lineal foot

Pipe Casings—$10.00 each.

Plastering—
Interior, on wood lath, 60c. to 65c. per yard.
Interior, on metal lath, $1.10 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Interior on brick or terra cotta, 50c. per yard.
Exterior, on metal lath, $1.80 per yard.
Wood lath, $8.25 at yard per 1000.
Metal studding, 80c. per yard.
Metal studding, with lath and plaster, $1.90 per yard.
Galv. (metal lath), 38c. and up per yard, according to gauge.
WAGE—Hod carriers, $7.50 per day.
Plasterers, $9.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for less than car load lots, $4.35 per 100 lbs.
Car load lots, $3.60 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

Roofing—
Five-ply tar and gravel, $7.00 per square.
Tile, $35.00 per square.
Redwood shingle, $10.00 per square.
Cedar shingle, $11.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

Rough Hardware—
Nails, per keg, $5.25 base.
Deafening felt, $100.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

Store Fronts—
Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

Structural Steel—$150.00 per ton.
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

Tile—
White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

Windows—
Metal, $2.00 a square foot.

the building. The study of vibration and its effects and how it may be eliminated or avoided is a complex problem at best, inasmuch as it is difficult to assign specific causes to the effects produced or to analyze the intricate influences concerned. Conditions in factories vary to such a degree and the personal factor is so inconstant that there is a great diversity of opinion as to just where vibration begins to prove harmful. The best that can be done, therefore, is to cover only some of the more general factors associated with the subject.

Vibration of a building may have a very serious effect on workmen. If it is at all severe, the efficiency of their labor may be very materially reduced and the output will be smaller, while employees will reach a state of fatigue sooner. By taking measures to counteract the vibrationary effects it has been found that greater human efficiency is possible with higher speed of workmanship and a better quality of work. Closely coupled with the efficiency of the worker is that of the machine, which is affected by vibration in one way or another. The effect on machinery is manifested in decreased output. The experiences of factory owners who have installed old equipment in new and stable buildings indicates that the output of these machines has greatly increased, due entirely to the elimination of vibration.

Factory building vibration is often responsible for waste of power and difficulties with line shafting. The vibration, in such a case, results in a mis-alignment, which makes it impossible to keep shafting true, with the result that added friction produces a loss of power. Trouble is often occasioned, further, with crystallization of machine parts on account of the vibrationary effects, for, where the machines are not cushioned, severe vibrations may result in crystallization of the metal parts and end in their breakage.

Every part of a building has a natural pitch, and, when set in motion, will vibrate at a periodic number of oscillations. The entire building, as well as its component members, conforms to this characteristic. The most harmful condition takes place when the frequency of the source of vibration coincides with the frequency of the building. When these are coincident, the action is aggravated, and may produce serious results. The effect of coincidence between the natural frequency of vibration of a floor and that of the source of disturbance is well illustrated by an experience contained in the report of the Aberthaw Construction Company, who have been conducting comprehensive investigations on the effect of vibration in structures. The case in point had to do with the testing of a small engine upon a floor of timber construction. At a speed of about 550 revolutions per minute the intensity of the floor vibration was so great that it was impossible to work in the drafting-room, located on the same floor more than 100 feet away, but this effect entirely disappeared when the speed was either increased or decreased by about 50 r. p. m. If the cause of vibration be intermittent and of a different frequency, the result will be a breaking-up of vibrations.

Vibration transmitted from sources outside the building are the most difficult to trace and the most difficult to overcome. The effect of passing trains is very common, and the transmission is due either to soil and rock vibrations or to atmospheric vibrations. In regard to vibration from external sources, Mr. Maurice Deutsch, C. E., is quoted in the report referred to as follows:

"Vibrations have of late been absorbing the attention of not only scientists, but of the general public, in large cities. Since the introduction

of skyscrapers, towering far above adjoining buildings, of large printing plants and power-houses, diversified complaints of vibration are frequently heard. The operation of heavy bed presses and reciprocating engines leave in their path a tremor to which many adjoining buildings are so naturally attuned that the vibrations are often not only annoying but dangerous, both to the building in which the machinery may be operating and to adjoining structures.

"In concrete steel monolithic structures, when properly designed, the entire mass acts as a unit to absorb vibrations, the main tendency being to set up an oscillatory motion of the entire structure; but this can generally be avoided if proper foundations are constructed, and if such precautions are taken in the location, arrangement, and operations of the moving machinery as have been found from experience would materially reduce the possible transmission of vibrations."

Absence of vibration in industrial buildings can be attained by giving due respect to the rigidity of the structure, to foresight in the placing of certain machines on solid foundations, to the proper cushioning of others, and to such arrangement of duplicate machines operating at the same speed as to avoid cumulative effect. Old buildings are usually more susceptible to vibrationary influences than more modern buildings, inasmuch as they are often unsuited to present-day requirements, and, moreover, many conditions which would receive immediate attention in up-to-date factories are often allowed to continue in old buildings.

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Save the Redwood Groves

On August 20th, in the office of the California Highway Commission in San Francisco, a notable conference took place between Messrs. N. D. Darlington, C. A. Whitmore, and George C. Mansfield, of the California Highway Commission; Messrs. Geo. C. Pardee, Col. Ed. Fletcher, Solon Williams and State Forester, G. M. Homans of the Forestry Board; Attorney General, U. S. Webb, State Superintendent of Banks, Chas. F. Stern, Judge F. A. Cutler of Eureka, and Professor J. C. Merriam of the University of California, as to measures necessary for the preservation of the redwood groves along the State highway in Mendocino, Humboldt and Del Norte Counties.

As a result of this meeting it was decided that the members of the Forestry Board and the Highway Commission, with others interested, should proceed at an early day in a body to make an inspection of the territory where redwood timber is now being cut along the highway in the Counties mentioned and endeavor, by personal appeal, to interest the owners of these lands in the movement to stop such devastation and save these trees for the generations to come.

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Housing Contract in France Let to Americans

MacArthur Brothers Co., Engineers and Contractors, New York and Chicago, have been awarded a contract by the French Government for the construction of 2,000 houses. This is the beginning of a large housing development in Paris, much along the same lines as the housing development undertaken by the United States Government during the war.

Popular Ignorance of the Architects' Profession

By J. C. NIEMEYER, Architect

FIRST of all, let us consider the meaning of "profession." The book of Webster says it is a vocation, and in order to get a clearer definition, we refer to "vocation," and find that it is a calling or trade. There are some people who will call on a physician regarding their physical well-being or a lawyer to solve their legal problems, yet when it comes to the planning and construction of a building they hesitate to consult the professional man who can solve the difficulties to be encountered and diagnose the case and prescribe the proper remedy.

A small party or a summer day picnic is scarcely encountered that has not been planned and carefully studied. Too many consider the architect as a mere representative whose principal work is to see that the contractor follows the specifications and does not cheat the owner. We feel, though, that opinions along this line are changing and that the owner is beginning to see that the experience and training of the architect is an absolute necessity for the successful construction of any building from the time of the sketches to the entering of the tenants.

There was never a set of plans so carefully drawn that points did not arise in the course of construction requiring interpretation either by their author or his representative. Also, there are many things that arise which could not be foreseen and often changes can be made to advantage. The necessity for seeking the services of an architect is simply recognized as good business by owners everywhere, even by those of the most limited foresight.

Every owner should study the specifications carefully, and the points that he does not understand should be made clear. He should realize very positively that a dollar will buy a dollar's worth of material or a dollar's worth of labor and that he is not fairly and justly entitled to more than his money's worth. When bids show that the cost exceeds the preliminary estimate (and it is very difficult under existing conditions for an architect to make a close estimate) the owner should make up his mind definitely to one or two things—that he is going to pay more money than he anticipated or that he is going to save money by the process of elimination, either by reducing size or by cutting features from the building, and if these eliminations are made he must make up his mind also that the building will suffer correspondingly. An owner who has an exaggerated idea of what he is going to get for his money is preferable to the one who cherishes false ideas. For their own sakes, architects should put a damper on dreams that are impossible of realization. Sometimes a tendency exists to paint facts in rosy colors in order that a job may be landed. On the other hand, the public has to become educated to the fact that the building game is not a bargain counter sale and there are but a very few bargains—it is an even exchange. Seeking bargains is the cause of greatest disappointment in the end, because the source of unscrupulous methods is very evident in the cheap constructions.

Progressive architects start with a design which contemplates a structure really worthy of themselves and the owner, but too often the things which the owner thinks he can get along without are lopped off one by one until all that is left is a structure plain, uninteresting, inefficient, serving the purpose neither of beauty nor utility, and he mourns over the lost ideal. Do not practice false economy.

Every house has a monetary value. As a home for its present owners it may be far removed from consideration of price but the change of fortune might throw it on the market in a day, and it is worth while to remember this and so build it that it will be marketable at an advantageous figure if such contingency arises. The architect is the man to point out these things in the beginning. It will be too late when the crisis actually comes. Urge the clients to build well, show them the advantage of putting in all modern conveniences. Some of these things may look like luxuries today but tomorrow every house will include them as a matter of course. Stimulate their pride to build ahead of the times. Let us consider our building as an organized creature, in coloring which we must look to the simple and separated organized things of nature. Our building if it is well composed is one thing, and is to be colored as nature would color a shell, a flower or an animal. It is absolutely essential to have a first-class set of plans and specifications to get satisfactory results. You may hear rumors that the better plans and specifications very clearly detailed and written will increase the cost of construction. How absurd that statement! The clearer the plan and specification the less misunderstanding of the work; as a matter of fact the plans and specifications are used merely as an interpretation of the work during the absence of the architect from that work, as it would be too costly to keep an architect on the job continually and also a tedious occupation. A good architect will tell you that he cannot put too much on a plan and specification because in case of dispute it is down in black and white and thereby no cause for misunderstanding and substitution. There are three phases of construction that are used in present day practice, viz:

First. The contractor that builds without plans or specifications, simply following the owner's choice of duplicating some built structure. These contractors are making the most money and you can readily prove this statement by investigating the wealth and retirement after a number of years of contracting. Why shouldn't they make money? They have matters in their own hands and can apply or substitute materials, foreign to the owner at their own discretion, as the market suggests, and in case of dispute who can arbitrate such a case? It immediately becomes a deadlock. Such cases of dispute are usually settled by legal procedure and expensive court costs. It can be said candidly of any such structure, with few exceptions, that the fees of an architect have been paid for many times over.

Second. The construction of dwellings or buildings where plans are furnished by the contractors themselves. These plans will be found quite incomplete and usually to the satisfaction of the contractor who pushes and recommends qualities and installations which net him the most. In cases of dispute or misunderstanding the plans are so vague that they are no better than none and are simply dimension guides. These methods, too, are found to be quite profitable to the contractor and an investigation will reveal their profits.

Third. The construction by the use of a competent set of plans, specifications and supervision, and by general contraction. By the constant attendance of the architect and the co-operation of the general contractor, owner and architect good results will be obtained and invariably a legitimate profit is made. This also bears investigation. If the results are not satisfactory it may be due to the delinquency of the architect.

There is still one item which should be mentioned, and that is of changes during construction. If the owner, through no fault of his own,

is not gifted to perceive the finished work from the blue prints and finds changes necessary for his satisfaction, he should not be obliged to pay a profit of from 25 to 100 per cent because of such change, as is quite customary under general contract practice. This should be governed by unit prices and the owner should only pay a just amount for such change. The general contractor is entitled to a fair profit as to the work involved. This is eliminated to a very minimum degree under the separate contract plan, as the owner deals directly with the architect and separate contractor for such change and pays only for such work and material necessary.

Another item to observe in construction is system and bookkeeping. Should an owner ask the general contractor during construction to see his books, and his reply would be, no. Why? Is it not a fair question to ask where one's money is being spent and how? Then the question of bonds arises. A bond is a protection in a sense, but in most cases when there is resort to it, it proves very unsatisfactory and the necessary procedure of settlement then is the court which is costly. By doing work through the separate contract plan the owner is directly contracted to the contractor and need not pay for any materials or labor until certified by the architect and properly executed and materials paid for. He needs no bond to guarantee the payment of bills.

Another question arises, that of buying homes already built. The fact that there is a ready market at all times is very evident. When buying ready-built places do not depend too much on your judgment and consider the future of the building. Many a poorly constructed building has been covered by a good coat of paint or varnish. The two main parts of a building are the foundation and roof. Further, as it is customary for architects and contractors to use a list of estimating, such a list would be commendable in buying also; especially when unaware of the requisites of completeness. When buying do not be persuaded by talk, but by facts, and be quite sure you are getting them complete. There being statements that no salesmen are needed to sell homes bears out the fact that 100 per cent face values need no salesmen but a skeptical purchaser has to be shown where the money has been spent and value received.

Then ask yourself, can I buy as cheap as I can build? Get competitive figures and see for yourself. In regard to stock plans there should be a law preventing such a practice because it is very detrimental to the civic pride and a retardant to any community. It is false economy because invariably one can have a change of exterior for the same interior without added cost in the construction. The mere fact of trying to eleminate the architect's fees is only retarding his skill and a severe obstacle to progress.

* * *

Contractor Lowers Bid

A precedent has been set; but examples to establish the practice firmly may be lacking for a long while. The unusual occurrence is this: A paving contractor in Utica, N. Y., after beginning work on a job, wrote to the city lowering his bid by about $1,300. In the letter authorizing the revision, the contractor stated that changes in cost since the bid was prepared made it possible to reduce the price of the pavement by 16 cents per sq. yd. Similar reductions on other contracts were promised in the event they were justified by conditions.—Engineering News Record.

THE
Architect and Engineer
INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional.

Vol. LIX. OCTOBER, 1919 No. 1

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Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

A NEW ERA FOR LANDSCAPE ARCHITECTURE

It seems fairly safe to prophesy that, in the immediate future, demands almost without precedent will be made upon Landscape Architecture all over this country. The time has arrived for creating permanent memorials of the war and for glorifying the part that men and women of many nations have played in the struggle, and the art of Landscape Architecture will be called upon to meet these new demands. While it is now ranked as one of the fine arts and as one of the effective means by which the general aesthetic sense of any community can be made manifest, it has not in the past been used extensively as a means of commemorating the achievements of a people, the love of country, the worship of high ideals or to record for future generations the magnitude of human sacrifices. Therefore, it is natural to expect that, under the stimulus of war-created emotion, and under the influence of that exaltation which, for good or ill, war tends to promote, Landscape Architecture will develop a new impulse and enter upon a fresh range of activity. Moreover, there is so much to commemorate that the landscape architects will have abounding opportunities to prove the extent of their capacities and their grasp on the conditions under which this art will have to be practiced.

These conditions will be, in many respects, unlike any that have existed in the past. There has never been a war which has intimately involved so many nations or in which so much that is vital to civilization has been at stake; there has never been one of which the after-consequences are so likely to affect the social order of every country and to change the direction of national progress all over the world. There has never been a previous conflict with such vast issues, or which has called for such stupendous sacrifices in all classes of a community, or such universal resolution to face with hope and

courage the most anxious uncertainties.

Because of all this, the Landscape Architecture of the future will have to be endowed with particular qualities, if it is to justify itself and be worthy of its period. The trivialities to which, in recent years, too many practitioners have descended must be forgotten; the extravagances which others have committed, in mistaken efforts to be original, must be set aside. Instead, a deeper appreciation of the purpose of the art must be cultivated. The monumental sense must be developed—the simple and noble dignity of sentiment that finds its expression more in large significance of design than in superficial cleverness of technique.

Fine craftsmanship will be needed, but this craftsmanship must be used, not to conceal the poverty of the landscape architect's conception, but to increase the power of his ideal and to make more convincing the aesthetic intention of his work. There need be no hint or suspicion of affectation; the only note that it will be permissible to sound must be one of absolute sincerity—one that will ring true and be in harmony with the feeling of nations which have suffered long and endured courageously.

J. W. Gregg,
Landscape Architect,
University of California.

TRAINING IN ARCHITECTURE

To practice the profession of architecture involves practice in one or more of its three separate fields—business, engineering and art.

To exist, a firm of architects must get business. Some one must have his ear to the ground to discover who is proposing the erection of a new structure. Some one must keep tab on construction reports and visit distant cities for prospective work. Architects must enter numerous contracts, make and supervise numerous specifications, prepare estimates of cost, inspect work during construction and reject defective work, pay and receive various sums of money and keep exact records. Evidently business ability is an essential element in the firm's maintenance of existence.

If a building fails in strength or develops defects the architect is blamed. If buildings are too heavy the architect is reducing business, as owners will not build if they cannot receive a fair return on the money invested. Conveniences are required in the way of lighting, ventilating, heating and proofing against fire, the transmission of sound and vibration that require the designer to have a knowledge of chemistry, heat, light, sound, electricity, strength of materials and sound building construction. These are engineering subjects when applied to important structures.

Writing on the subject in Building Review, Mr. W. H. P. Creighton, Dean of the College of Technology, Tulare University, says:

"A really successful structure is one pleasing to the eye when viewed from the exterior or interior. While it is true that what pleases one person may not please another, artistic success must mean pleasing those most competent to judge. The artistic setting, proportions and appearance of buildings is the province of the artistic member of the firm. Simply because a young man has failed in a number of lines of endeavor does not mean, however, that he has an artistic temperament and will make a successful architect.

"An architectural firm must do enough business to support all the members of the firm. Ideally it should contain a business man, an engineer and an artist. Where there is only enough business for two, the firm is composed of an outside and an inside man. Where the firm has only one member, he must be the outside man and engineer since the securing of new business and close supervision of work during construction are essential elements to the existence of the firm. He will at the same time supervise the artistic designs. The inside work is then carried on by employees whose work is supervised from time to time. In emergencies,

caused by sickness or shortage, the boss must also do this work.

"The above details are given to indicate the vast difference between the training necessary to produce a high grade architect and that for a draftsman. It shows that the training of an architect should rest on a broad foundation that includes languages, mathematics and sciences as well as drafting and designing."

Notes and Comments

A Plea for Less Ornamentation and More of the Practical

Some architects will not agree with this writer in the Toledo News Bee, who advocates less ornamentation in modern architecture and more of the practical. The ambitious architect, in the opinion of this critic, lacks a capacity for "harmonious distribution of expenditure." In other words, he prefers to make a big showing at the expense of the actual requirements of the house. To quote:

A great American architect was in the habit of using this expression to his clients and students: "The inharmonious distribution of expenditure!"

When asked for his meaning, he explained that he once stopped in a hotel with a white marble "grand" stairway, the posts and ballusters of which were elaborately carved. At one side of this stairway was the cheapest type of passenger elevator that most of the time did not run by reason of its being out of order.

The architect went on to explain that it would have been a more harmonious distribution of expenditure to have spent less on elaborate marble carving and more on the elevator.

There is going to be a lot of home building within the next few years, and this principle of the inharmonious distribution of expenditure will apply to the frame dwelling quite as well as to the commercial structure.

In our home building of the past we have sacrificed much in the way of comfort and convenience for mere bigness and useless elaboration.

But we are learning, for instance, that a chicken will cook just as well with the kitchen table or sink alongside and next to the range as on the other side of a 16-foot room.

The modern kitchen is small, very much in the nature of a laboratory, and is being designed to save steps and motions as in the case of the modern factory.

We are learning that it is better to expend the cost of towers, dormers, elaborate gable fronts and beveled glass windows in more and better plumbing, heating and the general utilities of a dwelling.

Plant Trees Along Country Highways

There were many valuable suggestions contained in Mr. Neil T. Childs' article on "Highways, Byways and Hedges," in the August number of The Architect and Engineer, and also in Mr. McLaren's article on "Adornment of our Public Highway System," in the same issue.

Now if every landscape architect, construction engineer and road official would interest himself to the extent of preaching "Trees, and More Trees," in his particular locality, our roads would take on a deal more attractiveness, would be better preserved, and more frequently sought by the tourist and lover of nature.

Have you read Joyce Kilmer's beautiful poem? Scissor it out and put it away among your treasures as one of the finest descriptions of what a tree really means that has been written in recent years:—

TREES

By Joyce Kilmer.

I think that I shall never see
A poem lovely as a tree.
A tree whose hungry mouth is prest
Against the earth's sweet flowing breast;
A tree that looks at God all day,
And lifts her leafy arms to pray;
A tree that may in summer wear
A nest of robins in her hair;
Upon whose bosom snow has lain;
Who intimately likes the rain.
Poems are made by fools like me,
But only God can make a tree.

Communications

Valuable Collection of Architectural Books

September 22, 1919.

Editor The Architect and Engineer,
San Francisco, California.

The enclosed newspaper clipping is sent you with the hope that it may be useful matter.

If you print anything concerning this John Correja Collection of Architecture and Design, we should be very glad to have a marked copy of your publication containing any mention of the Correja Collection. I shall submit it to Mrs. Correja, so that she may know that the architectural publications are interested in such a memorial.

If Mrs. Correja makes provision for an endowment I wish to take up the question of architectural periodicals with our board and with Mrs. Correja.

John Correja, Sr., was a church architect in New York and many of the books given us are very valuable treatises on Gothic and other church design. Considerable of the material is in French, some in German and some in English.

Mrs. Correja will undoubtedly provide an endowment and we shall need advice and help in making yearly additions to the collection.

Very truly yours,

JOSEPH F. DANIELS,

Librarian Riverside Public Library.

[EDITOR'S NOTE:—The Riverside Public Library has just received the architectural library of the late John Correja. The collection will be called the John Correja Collection of Architecture and Design. The clipping referred to in Mr. Daniels' letter from the Riverside Daily Press is in part as follows:]

The John Correja Collection of Architecture and Design of the name of the gift of Mrs. John Correja to the Riverside public library. It is a memorial collection and contains nearly all the books in the library of the late John Correja.

In the collection of nearly 300 volumes the greater part treats of architecture and design, in large, handsome volumes of beautiful plates and fine bindings.

Owen Jones, Violett le Duc, Coney Ferguson and others are represented by their most important works. Many of the great French and German classics in architecture, historic ornament and design in original text with bright, clear plates, will be the joy of students of design and the history of architecture.

The Correja collection added to the art books now in the public library, equips the institution for student use with a wealth of material in a subject not available except in very large collections or in special, architectural libraries.

* * *

John Correja was born in Brooklyn, April 12, 1854, and died in Riverside, April 17, 1918.

His eastern home was in Woodbridge township, New Jersey, where he was a freeholder and a man noted for his talents and public spirit.

After graduating from the Brooklyn Polytechnic institute, he entered the office of his father, a well known and successful architect of New York City. Mr. Correja, like his father, was an excellent draftsman and designer, an architect, engineer, road-builder, a designer of ship and boat models of every description and of every country, a patron of arts and sciences, and a collector of ancient arms and armor comparable with the museum experts.

Mr. Correja came to Riverside in 1910 and was appointed a director of the Riverside public library in 1917. He was an energetic, active man of strong character, with a sound business experience that made him of great value to the city and to the library.

Salesmen Who Talk Too Much

Editor The Architect and Engineer,
San Francisco.

Herewith a few lines of advice to the salesman who interviews the architect, the engineer and the contractor, and who, unfortunately for himself, seems at a loss to know when he has said enough:

Don't talk about your business affairs to people whom you meet, or old acquaintances either. If you really must talk go out somewhere, alone, and give free rein to your desire, then you can come back and feel that no one will repeat what you have said.

A great many people, both men and women, are given to telling mutual friends, and sometimes chance acquaintances, of their achievements in a business way, and in which the listener is seldom interested. In this connection let me relate an incident which occurred a few years ago in a middle Western town. I was present at a small gathering of neighborhood friends, among whom was a traveling salesman, a man of about forty-five years of age, and from all appearances a sensible man, and one would not judge, to look at him, that he would be given to talking about himself. Alas, such was the case. During the course of conversation he began to talk of his business, his success and his method of getting the business. In the midst of his tale he was rudely interrupted by a woman in the party addressing another across the room in a loud tone: "Mrs. Jones, do you know that you can get eight pounds of the nicest peaches for a quarter at the 'Model Grocery,' and so much cheaper than any other store?" The traveling salesman was so angry that he immediately left and the woman, entirely unconscious of her error, remarked that she was sorry that he was leaving so hastily.

Which all goes to show that the general public is not even interested in your affairs, no matter how deeply you may be.

How many business "deals" have fallen through on account of this same desire to talk about your business. You don't know who is going to repeat it and what harm your thoughtless remarks will cause. Do you know why men are successful in many ways? Because they have the ability to keep their mouth shut and keeping business matters to themselves, not discussing them in public, or even among friends. Do you suppose that two or more big business men on their way, perhaps, to an important board meeting, where transactions involving thousands of dollars would come up, do you suppose they would publicly talk about it on the way there, and scheme to get the best of Smith or Jones, going over in detail the methods of procedure? No. The probabilities are that they would be talking baseball or golf, anything but business. Then follow their example and stop talking.

Supposing you are selling a staple article and competition is keen. You happen to meet Mr. Smith who is an old friend and one whose opinion you value highly. You begin telling him some of your experiences and the difficulties you are having in "putting it over." How do you know that he is not a better friend of your fiercest competitor than he is of yours? He may have made it a point to meet you purposely, knowing your weakness in regard to talking, and is the only one that could possibly "reach" you. Do you see the damage you have done when it is too late? Do you see the advantage your competitor has over you, assuming that this has really happened? In this way he may know of the cuts you have had to make to get the business and you wonder how it happened when your competitor gets the business.

Try and establish a reputation for being "close mouthed"—it will stand you in good stead. What you know and keep under your hat is the foundation of your success. It requires great strength of character to curb the propensity for talking too much once it has become a habit, but if one will only stop, think and reflect before he starts to talk about business matters which can have no interest to any one but yourself, and which another might use to his own advantage, and say to

(Concluded on page 121)

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

High School Competition

Mr. Mott M. Marston, 535 I. W. Hellman building, Los Angeles, won first prize in the competition held under the auspices of the American Institute of Architects to select a plan for a new "layout" for the Fullerton Union High School. Mr. Charles F. Plummer, Story building, Los Angeles, was awarded the second prize; Messrs. Allison & Allison, Hibernian building, Los Angeles, third prize, and Mr. Elmer Grey, Wright & Callender building, Los Angeles, fourth prize. The prizes are all cash, being respectively $2000, $500, $300 and $200.

Selection of the first prize plan was unanimous, the jury of award consisting of Messrs. A. F. Rosenheim and H. F. Withey of Los Angeles and the board of trustees of the high school district. Twenty-two architects registered for the competition, but only ten sets of plans were submitted.

The program was prepared by Mr. C. M. Winslow of Los Angeles, who acted as advisory architect. It called for drawings on two sheets, one showing the grouping of the buildings on the ground and landscaping together with ground floor plans of the buildings and the other showing the second floor plans of the buildings.

The object of the competition was to secure the best possible plan for future development and expansion of the high school. The program required that the new plan should not disturb certain buildings while others now on the site might be moved.

Office and Shop Building

Mr. E. C. Hemmings, architect in the Strand Theatre building, Sacramento, has been commissioned to prepare plans for a three-story mill construction brick office building and a one-story shop building, the latter 160x500, for Pacific Auto-Rail Car Company, whose plant in Sacramento was destroyed by fire.

Auto Sales Building

Mr. Sam L. Hyman, Crocker building, San Francisco, has prepared plans for a two-story and basement automobile sales building for Mr. Louis R. Lurie, Mills building, San Francisco. The location is the site of the old Stetson residence on the northwest corner of Van Ness avenue and Clay street, San Francisco.

Memorial Building

Messrs. Woollett & Lamb, architects in the Physicians building, Sacramento, have prepared preliminary plans for a two-story memorial hall to be built at Montague, Siskiyou county, at an estimated cost of $50,000. The same firm of architects are busy on plans for the new Chico High School to cost in excess of $200,000. Contracts have recently been let by them for a five-story reinforced concrete warehouse, 80x80, to be erected at Twenty-first and "R" streets, Sacramento, for the Capitol Van & Storage Company. Mr. George D. Hudnutt of Sacramento, is the contractor, and he has agreed to put up the building for $71,849.

Personal

Mr. Mott M. Marston, Los Angeles architect, for several years connected with the engineering department of the Salt Lake Railway in charge of its architectural work, has resumed private practice of his profession with office at 535 I. W. Hellman buildng, Los Angeles.

Messrs. Ward & Blohme, architects, have moved from the Alaska Commercial building to handsome offices on the second floor, Canadian Bank of Commerce building, 454 California street, San Francisco.

Mr. A. R. Johnson, for a number of years head draftsman for Mr. Henry H. Meyers, Kohl building, San Francisco, is now associated with Mr. Ernest J. Kump, architect of Fresno.

Mr. Howard E. Jones, formerly of Los Angeles, is now located at San Bernardino, with office in room 404 Katz building, that city. He would be pleased to receive catalogs and trade literature.

Mr. Ernest Coxhead, having returned from France, has resumed the practice of architecture with his brother, Mr. Almeric Coxhead, in the Hearst building, San Francisco.

Messrs. Clarence A. Tantau and John K. Branner have moved their architectural offices from the Clunie building to 251 Kearny street, San Francisco.

Mr. A. W. Burgren has associated himself with Mr. Mathew O'Brien, architect in the Foxcroft building, San Francisco.

Mr. Houghton Sawyer has resumed the practice of architecture and has opened an office in the Hearst building, San Francisco.

Death Calls

San Francisco architects were shocked by the death of two members of the profession the past month. Mr. Tobias Bearwald, formerly of Faber and Bearwald, architects in the Merchants National Bank building, died of consumption following a comparatively short illness. During the war Mr. Bearwald was a valued member of the drafting forces in Chief Engineer Frank White's office, California State Harbor Commission. Later he was employed by Mr. Mathew O'Brien, architect in the Foxcroft building. Mr. Bearwald was a member of the San Francisco Architectural Club, in fact, was one of its organizers years ago.

On September 28th Mr. Frank O'Brien, artist and delineator, died at his Sacramento street home after an illness of five days. Mr. O'Brien was a gifted water colorist and his perspective renderings were much sought after by architects. He was a native of San Francisco and son of a pioneer resident of the city.

Passing of Pioneer Fresno Architect

Mr. A. C. Swartz, senior member of the firm of Swartz & Swartz, architects of Fresno, California, passed away August 27th, aged 73 years. Mr. Swartz had been a resident of Fresno some thirty years, and since 1909 was associated with his son, Mr. Fred L. Swartz, in the practice of architecture. The latter will continue to carry on the business.

Mr. A. C. Swartz was a native of West Moreland county, Pennsylvania. He graduated in the Department of Engineering, University of Illinois, in 1873. When the Santa Fe built its railroad on the Coast, Mr. Swartz was in charge of the survey through the Rocky mountains. In 1890 Mr. Swartz was commissioned to make a survey for a railroad through the Pacheco Pass country, the road to connect Fresno Valley with the Coast. Owing to the sudden death of the president of the company, construction of this road was abandoned. Mr. Swartz was a member of Fresno Lodge, F. & A. M.

State Board of Architecture

Governor Stephens has made the following appointments on the California State Board of Architecture:

For the Southern district—Mr. Myron Hunt, Pasadena, vice Mr. S. P. Hunt; Mr. William H. Wheeler, San Diego, vice Mr. W. S. Hebbard; Mr. A. M. Edelman, Los Angeles, vice Mr. John R. Krempel; Mr. John Parkinson, Los Angeles, vice Mr. Octavius Morgan.

For the Northern district—Mr. J. R. Miller, San Francisco, vice Mr. E. A. Mathews; Mr. Edward Glass, Fresno, vice Mr. William Curlett, deceased; Mr. John J. Donovan, Oakland, vice Mr. J. C. Newsom; Mr. Clarence R. Ward, San Francisco, vice Mr. John Bakewell, Jr.

All the appointees are well known and their selection has the approval of the profession.

Large Oakland Cannery

The Jones Co., Ltd., an Australian canning company, will build an immense plant in East Oakland at an outlay of $250,000, exclusive of machinery and equipment. Mr. Washington Miller, Lachman building, San Francisco, is preparing the plans. The plant will comprise the following buildings:

Administration building, 40x100, one story, of reinforced concrete.

Welfare building, 40x220, one story, reinforced concrete, with steel sash.

Main cannery, 200x460, one-story brick; also warehouse, with steel trusses in separation room; concrete floors throughout, steel sash and rolling steel shutters.

Power plant, one story, 40x100, equipped with three 250-horsepower boilers, pumps, pressure tanks, etc.

All the buildings will have flat roofs. There will be no basements in any of the structures.

Improvements at Mayor Rolph's Home

Mayor James Rolph of San Francisco is to build a social hall and private club house at his residence on San Jose avenue, which will enable him to better entertain his friends. He will also provide for his growing collection of prize poultry and canines by building new chicken houses and kennels. A garage with chauffeur's apartments is also included in a building contract let to Supervisor Ralph McLaren, for approximately $41,000. Mr. John Reid, Jr., is the architect.

Commission for Mr. Whitton

Mr. Frederick Whitton, 269 Pine street, San Francisco, has been selected as Construction Manager of the Weinstock-Lubin department store building to be erected at Eleventh and J streets, Sacramento. The plans will be prepared in Mr. Whitton's office and construction of the building will be entirely in his hands. About $750,000 will be expended on the improvements.

$150,000 Hotel for Turlock

Mr. William H. Weeks of San Francisco is preparing plans for a four-story reinforced concrete and brick hotel for Mr. John B. Kerfoot of Turlock. There will be 120 rooms in addition to a large dining room, palm garden, lobby, and club rooms. The building and site will represent an investment of $200,000.

To Improve Irrigating System

Directors of the Oakdale and South San Joaquin irrigation districts have jointly agreed to improve the irrigating system by reconcreting the tunnels and canals. Mr. R. W. Olmstead, Oakdale, is chief engineer.

Advertising

The Architect and Engineer carries the third largest volume of advertising of architectural journals in the United States.

Frame Residence

Mr. Elmer Grey, 507 Wright & Callender building, Los Angeles, is preparing revised plans for a two-story frame and plaster residence to be erected on Franklin avenue, Hollywood, for Mr. O. L. Baumbach. The house will contain eight rooms and two bathrooms and will have concrete foundation, cement plastered exterior, Spanish clay tile roofing, ornamental iron work, staff ornamentation, hardwood and enameled interior finish, oak floors, tile and brick fireplace, tiled bathrooms, automatic water heater, and furnace heating.

Building for Gas Company

Mr. Wm. Knowles, Hearst building, San Francisco, has prepared plans for a garage building, 150x155, to be erected at Fifth and Howard streets, San Francisco, for the Pacific Gas & Electric Company. The same architect has completed plans for a $15,000 country residence near Woodland for Mr. Alexander McPherson and plans are in course of preparation by Mr. Knowles for a $25,000 home at Piedmont for Mr. Phillip Clay.

Additions to Bass Hueter Plant

The Bass Hueter Company will build two large additions to its Twenty-fourth street plant in San Francisco. Contracts amounting to $90,000 have been awarded to Palmer & Petersen, Monadnock building, San Francisco. The buildings will be of mill construction.

Addition to Stockton Convent

Mr. George E. McCrea, Pacific building, Oakland, has completed plans for a two-story brick convent for St. Agnes Parish, Rev. Father McGough, at Stockton, pastor. The building will adjoin the present seminary. It will contain twenty rooms and cost $25,000.

Northbrae Church

Mr. John H. Thomas of Berkeley, has completed plans for a church, chapel and social center to be built on Los Angeles street and The Alameda, Northbrae, Berkeley. The contract for the work has been let to Mr. H. P. Hoyt.

Berkeley Residences

Mr. James W. Plachek has taken bids for a $20,000 home in Northbrae, Berkeley, for Mr. Roy L. Donley. He has also completed plans for a $5,000 bungalow for Mr. C. F. Louideck, manager of the Berkeley Hardware store.

Sales Promotion Manager

Mr. G. S. Sturges has been appointed Sales Promotion Manager of the Glidden Company. He was formerly associated with The Eagle Picher Lead Company and The Sherwin-Williams Company.

Bank Building and Printing Plant

Mr. Eugene Mathewson, architect of Fresno, has completed plans and let a contract to Anton Johnson of Kingsburg, for a one-story bank building at Sanger for the First National Bank of that city. Mr. Mathewson is preparing plans for a brick printing plant to be erected on "H" street, Fresno, for the Crown Printing Company. A contract has been let by Mr. Mathewson to the Lindgren Company of San Francisco to build the new twelve-story Mattei building in Fresno, which is to cost in the neighborhood of $600,000.

Los Angeles Speedway

Messrs. W. J. Dodd and Wm. Richards, 905 Brack-Shops building, Los Angeles, have prepared plans for a large speedway to be erected at Beverly Hills for the Los Angeles Speedway Association. The course will be one and one-fourth miles in length and of frame construction. There will also be grandstands, garages, utility buildings, etc., of frame construction. The entire site, which comprises 200 acres, will be fenced.

Concrete Garage

Messrs. Morgan, Walls & Morgan, 1124 Van Nuys building, Los Angeles, are preparing revised plans for the Class A reinforced concrete garage to be erected at the southeast corner of Eleventh and Flower streets for Mrs. S. H. Van Nuys. The size of the building will be increased about fifty per cent. It will be a three-story structure.

Architects' Licenses

Mr. Louis Baeder, chairman of Washington State Board of Architect Examiners, has announced that applications for license to use the title architect will be received by the secretary until December 11, after which date architects who wish to practice under the title will submit to an examination. Mr. A. J. Russell, National Realty building, Tacoma, is secretary.

Talk of Big Hotel

A splendid hotel overlooking the Capitol Extension building and grounds on L street, between Eighth and Ninth, costing $1,000,000 or more, is projected for Sacramento by Eastern capitalists. Mr. Charles J. Chittenden, who promoted the new Weinstock, Lubin & Company department store site on Eleventh and J streets, has an option on the L street property.

Informal Competition

The following architects, all of Portland, Oregon, have been asked by the Knights of Columbus to submit competitive plans for the proposed $100,000 lodge hall: Messrs. Jos. Jacobberger, Houghtaling & Dougan, and Whitehouse & Fouilhoux. A four-story brick building, 50x100, is planned.

Goes to Honolulu

Mr. Milton T. Clark, who recently resigned as superintendent of construction for the San Francisco board of works, will go to Honolulu and will identify himself there with the firm of C. W. Dickey and Hart Wood, architects. Mr. Clark is succeeded by Mr. H. E. Rahlmann, a member of the municipal architectural bureau staff for some years.

Residence Contract Awarded

Messrs. W. C. Duncan & Co., Sharon building, San Francisco, have been awarded a contract for the construction of a $30,000 country house at Hillsborough for Mr. G. L. Rathbone of Burlingame. Plans were prepared by Messrs. Bakewell & Brown, 251 Kearny street, San Francisco.

Concrete Garage

The John Breuner Co. of Sacramento, is having plans prepared by Mr. E. C. Hemmings, Strand Theatre building, Sacramento, for a two-story reinforced concrete garage and shipping depot to be erected at Sixth and "L" streets, at an estimated cost of $45,000.

Bonds Voted for Schoolhouse

The citizens of the Visitacion School District below South San Francisco, have voted $24,000 for a one-story frame schoolhouse, plans for which are being prepared by Mr. E. L. Norberg, Bankers Investment building, San Francisco.

Knights Landing Bank

Preliminary plans have been started by Mr. W. H. Weeks for a branch bank building at Knights Landing for the First National and Home Savings Bank of Woodland. There will also be four stores. Cost —$40,000.

Designing Power Plant

Mr. H. J. Brunnier, C. E., Sharon building, San Francisco, is preparing plans for a steel frame and reinforced concrete power plant to be erected at Eureka for the Hammond Lumber Company.

Orphanage Buildings

The Protestant Orphan Asylum at Haight and Buchanan streets, San Francisco, is to have a number of new buildings, plans for which are being prepared by Messrs. Bliss & Faville, Balboa building, San Francisco.

Sketches for Factory

Mr. Frank S. Holland, 1629 Folsom street, San Francisco, has prepared sketches for a three-story reinforced concrete factory at Richmond.

To Design Jackling House

Messrs. Bakewell & Brown of San Francisco have been commissioned to prepare plans for a country house at Burlingame for Colonel J. C. Jackling.

Architects Eligible to the A. A. E.

Announcement has been made from national headquarters that the executive committee of the American Association of Engineers has rendered a decision that the constitution of the association does not prohibit the admission of architects, and announces that applications of architects will be considered hereafter as in the same status as applications from engineers. Those architects who have previously applied for membership and whose applications could not be accepted on account of the apparent exclusion of architects by the constitution, may now re-enter their applications for membership.

Has $100,000 Commission

Mr. Jesse C. Peterson, formerly of Chicago, has established permanent offices for the practice of architecture in the Peoples Savings Bank building, Sacramento. Mr. Peterson has prepared plans for reconstructing a three-story brick factory on Second street, between H and I streets, for the Capitol Candy & Cracker Co. This building was gutted by fire some months ago. The repairs will cost close to $100,000. Mr. Peterson has other large work in prospect, details of which will be made public shortly.

George C. Sellon & Company Busy

New work in the office of Messrs. George C. Sellon & Co., 1005 Eighth street, Sacramento, includes a $60,000 pressed brick grammar school building at Lovelock, Nevada; $47,000 concrete school building at Corning; $50,000 hollow tile school building at Davis; court house for Plumas county, to cost $150,000; reinforced concrete loft building at Reno to cost $60,000, and a group of high school buildings at Elk Grove to cost $125,000.

Ten-Story Office Building

Messrs. Bakewell and Brown, 251 Kearny street, San Francisco, will be associated with Messrs. Reid Bros. in the preparation of plans for a ten-story Class A store and office building at Powell and Post streets, San Francisco, for Mr. William M. Fitzhugh. The building will contain approximately 200 offices for physicians and dentists and will represent an outlay of $400,000.

Architect Sues for Commission

Mr. Joseph L. Stewart, San Francisco architect, has filed suit in the Superior Court against Marion L. Sherman and Lucretia F. Sherman for $6480 that he says is due for plans of a building to be erected at Second and Brannan streets, San Francisco.

Draftsman Wanted

Mr. Ernest J. Kump, Howell building, Fresno, wants an architectural draftsman to work on scale drawings. Applicant should state previous experience and salary desired.

Counterpart of Greek Architecture

The American counterpart of Greek architecture is found in the skyscraper rather than in the business building that tries to look like a Greek temple, according to Mr. Rossiter Howard, educational director of the Minneapolis Institute of Arts, who lectured in the institute on "Architecture in Greece and New York."

"When the Greek desired to support a horizontal," Mr. Howard said, "he placed under it posts and channeled them to carry the attention up. The top of each column was carefully modeled in a flare that prevented any feeling of jolt in meeting the horizontal. Sensitive control of line, light and shadow gave the most perfect expression of the actual work being done by the column.

"It was otherwise in Rome, where the support was as likely as not given by an arch or solid mass of concrete, and the columns were added for variety, like the ribbons on a woman's dress. The Greek was like a modern man, who never would think of letting his tailor put buttons on the front of his coat and then hooking it up the back.

"In modern architecture we have both methods. Many buildings carry out the tradition of Rome and ancient Italy, their beauty dependent on the decorative effect of columns which hardly make pretense of work—mere compositions of form to give pleasing variety to the face of a building whose true structure we are not allowed to enjoy.

"In recent years, however, it seems that the engineer architects have themselves found such pleasure in the hundreds of feet of vertical steel that they have devised original garments of terra cotta that disclose the frame in its inherent beauty and power. Such a building is our own Metropolitan Bank building and that supreme achievement of commercial beauty, the Woolworth building in New York."

Architects for State Work

Olympia, Wash.—According to Mr. T. E. Skaggs, chairman of the Washington State Board of Control, work will be started in May on $745,000 worth of State buildings. Architects have been appointed and plans are under way as follows:

Mr. George W. Lawton of Seattle architect for the Veterans' Home at Retsil.

Messrs. Heath & Gove, Tacoma, two ward buildings for Northern State Hospital at Sedro-Woolley, cost $170,000.

Mr. Julius Zittel, Spokane, State architect, two annex buildings for Custodial School at Medical Lake. The Legislature appropriated $190,000. Mr. Zittel will also have charge of the architectural work for a $75,000 barracks building for the Soldiers' Home at Orting, two cottages for the schoolgirls at Grand Mound to cost $130,000, the $60,000 gymnasium and boys' shop for the boys' training school at Chehalis and an $80,000 laundry building and power plant for the Western State Hospital at Steilacoom.

Film Studio Planned

The Belle Bennett Pictures Corp., C. E. Bentley, manager, recently organized with a capital of $750,000, is planning to build a glass enclosed studio in San Francisco for the production of moving pictures.

Communications

(Continued from page 115)

yourself, "will he repeat this, and if he does will it do me any good or will it do me harm?" the chances are that it will probably be left unsaid and you will be the gainer.

This keeping one's mouth shut not only applies to men in the business world, but to women also. Scraps of conversation overheard at lunch places, on street cars and various other places, go to prove this. Overhearing some of these things myself and knowing what harm they would do should they get to wrong parties has impelled me to write the above.

Let us hope that it is not general, and if any one who reads this has this habit, let him begin now to overcome it and see what a wonderful asset it is to him. MUM.

Another Evidence of Appreciation

Editor The Architect and Engineer,
San Francisco, California.

Gentlemen:—Kindly mail The Architect and Engineer to the following yards for one year, commencing with the September, 1919, issue:

The Diamond Match Co.,				Yuba City,	California.
"	"	"	"	Woodland,	"
"	"	"	"	Willows,	"
"	"	"	"	Orland,	"
"	"	"	"	Redding,	"

Your September number, showing types of apartment houses, with floor plans; also, showing the present cost of building materials on pages 105 and 106, are extremely good.

Render bills in triplicate to this office, and oblige,

Yours truly,
THE DIAMOND MATCH CO,
Branch Yards Dept.
W. B. DEAN,
Manager.

Wishes Building Trade Information

Editor The Architect and Engineer,
San Francisco.

Gentlemen:—We are investigating the possibility of Standard Houses for export to Greece and the Near Eastern countries, and would appreciate any information that you can give us upon this subject. We are particularly interested in getting in touch with people who might be able to supply us with all the material required to build standard houses, such as lumber, lath, shingles, doors, windows, hardware, paints, etc., and would greatly appreciate your sending us the names of any who you think might be interested. We will also be glad to receive any literature on this subject.

Thanking you in advance, we are,

Yours very truly,
UNIVERSAL EXPORT & IMPORT COMPANY,
68 Devonshire street,
Boston, Mass.
By S. SIMONS.

Fifteen-Story Bank Building

The Tacoma Scandinavian-American bank will erect a 15-story bank and office building from plans by Mr. Frederick Weber, architect of Philadelphia. A contract for the building has been let to the Black Masonry and Construction Company of St. Louis, which company built the new Washington Hotel, Seattle.

Addition to Insurance Building

A one-story Class A addition is to be built to the Royal Insurance building, 201 Sansome street, San Francisco, from plans by Mr. J. W. Dolliver. The addition will provide a large restaurant and rest room for the employes of the insurance company. Mr. Geo. Wagner has the contract.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

The Motion Picture Machine as an Engineering Instrument

IN a letter in the Railway Age, Mr. J. C. Marsh points out some of the possibilities in the engineering field for the moving picture machine. We quote from his letter as follows:

There is every reason why the moving picture machine should become a scientific instrument for the use of the civil engineering profession. Its ramifications are untold and apparently unlimited. It is surprising that some of the scientific instrument makers have not seen its possibilities and produced a machine that would meet the requirements of this field.

If an instrument were built with leveling attachments for the horizontal plane and a telescope with cross-hairs, it would seem to be what would be needed. By means of the leveling device, pictures obtained would conform to diagrams and detailed drawings. The telescope with its cross-hairs would enable the operator to focus the machine carefully on the point and in the desired plane.

Such a machine would be particularly acceptable to railway engineering. With it the problem of the rail under load, that has been bothering investigators for some time, might be solved. The instrument could be set up so that the horizontal cross-hair is parallel with the top of the rail, when free from load and at a distance of ten feet from the rail so that the instrument would be prevented from receiving the vibrations from passing trains. A record of the cars and their weight would be shown in the pictures. A cross-hair immediately in front of the films and corresponding to the cross-hair in the telescope would show the actual point of the top of the rail before being loaded. As the train passed (speed to be determined and the reel turned to meet such a speed) the depression of the rail would be shown upon the films.

It might be possible that some calculations would be necessary, but this could be determined by experiments.

Individual films of reels, so taken, could be selected from which graphs could be made. In this manner it seems possible that accurate knowledge of the action of the rail under load at varying speeds of trains could be obtained. It would also seem possible that movements of all the rails and parts of crossings could so be obtained. These films or sets of pictures, taken in conjunction with tests of the rail under transverse and alternating stresses and with a knowledge of the elastic limit and ultimate load of the steel of the rails undergoing investigation, would apparently give the investigators a rather comprehensive knowledge of the rail under load.

Investigators of rails under load have stated that the means so far employed have not been satisfactory for many reasons. It would seem, to the writer, that the instrument or machine suggested, would be available for bridges, culverts, locomotive driving wheel counter balances and many other problems that are now perplexing railway engineers.

Same Thing May Happen Here

[From Contract Record, Toronto, Canada.]

THE following extracts from a letter received in this office are the forerunner, we fear, of a general movement towards our shores of undesirables who have learned during the past five years of Canada, and her soldiers, and her resources, and conclude that a country that produces such quality must be a good place to live in. Let us not repeat the mistake of the past, however. The war has shown us the value of "hyphens." Of whatever rank and calling, they have been a source of weakness in our national effort and we want no more of them. Surely Canada is a good enough country to attract the best class of citizens. Then let us have none but the best.

Our reply to this letter is merely a polite way of saying all this, but it will be necessary to do more than "discourage" these people. Our government must see to it that no foreigner enters this country unless it can be shown, (1) that he can and will make a good loyal Canadian citizen and, (2) that the class to which he belongs is in need of further recruits. An engineer-architect, educated in Austria and resident in Bulgaria, is most certainly not in either of these classes.

THE LETTER

"Having finished a course in Austria in 1893, in a school of engineers, with particular attention to the department of bridges and highways, I have been employed in Bulgaria as engineer-in-charge of the state and of the district. Latterly I have been situated at Roustchouk, one of the most beautiful industrial towns in our country, in which I have founded a technical bureau, working along the same

lines. In addition to my mother tongue I also understand German, a little French and English, and the language of the nations neighboring on Bulgaria.

"I have it in mind to leave Bulgaria and go with my family to your country if I could procure an appointment as engineer-architect. To attain this end I am addressing myself to you and am prepared to send you the proper legal documents of the Bulgarian authorities, and all the documents and certificates you may have need of, as well as references.

"In consequence I beg you to inform me if there is any chance of obtaining employment similar to my present employment in your city, or in that vicinity. If the answer is in the affirmative, be good enough to advise me of the conditions and the approximate salary I would receive. I assure you in advance that I would do everything possible to make my work a success and to please my employers."

OUR REPLY

"Answering your favor of May 10, our advice would be that you give up all idea of coming to Canada at the present time. The technical requirements of this country are being well taken care of by our own engineers, the supply of which is ample."

Engineers for All-American Canal

The proposed All-American Canal from the U. S. reclamation dam in the Colorado river at Yuma, Ariz., to the Imperial Valley to irrigate the lands of the Imperial Irrigation district and about 400,000 acres of undeveloped land outside the district, furnished the technical features of the program for the September dinner meeting of the Engineers and Architects' Association of Southern California. Mr. A. L. Sonderegger, consulting engineer of Los Angeles, presented a paper describing the All-American canal project which he declared to be both feasible and practicable and of vital importance to the economic stability and future development of the Imperial Valley. The cost of the project is estimated at $30,000,000 to $40,000,000. Mr. Sonderegger's paper will be published in full in The Architect and Engineer. Resolutions presented by Secretary George P. Robinson, endorsing the canal project and the general conservation of flood waters with regulation of the flow of the Colorado river were adopted.

American Association of Engineers

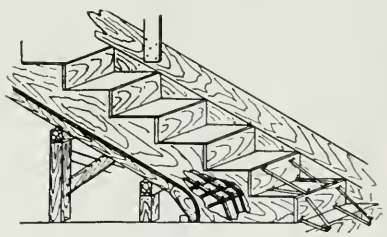
It is announced that the national headquarters of the American Association of Engineers in Chicago will be moved from the present location at 29 La Salle street, to the Nepeenauk building, in the same city, in which 6000 square feet of office space has been leased. The Chicago chapter, which now has more than 1100 members, will occupy the quarters to be vacated by the national organization. Increasing office space requirements attest the rapid growth of the American Association of Engineers.

Warehouse and Apartments

Mr. E. Heiman, architect in the Mechanics Institute Building, San Francisco, has completed plans for a six story brick and mill construction warehouse, 50 x 105, to be erected on Capp street, near 16th, San Francisco, for the Lachman Furniture Company. The building will be equipped with automatic fire sprinklers and freight elevators and will cost $65,000. The same architect has prepared plans for a three story brick apartment house for himself and Mr. M. D. Spiro, to be built at Jackson and Powell streets, San Francisco.

Reinforced Concrete Stairs

THE installation of reinforced concrete stairs offers a splendid field for ingenuity. A recent design considering economy, stability, simplicity of construction and speed, has been found most adaptable.



A Reinforced Concrete Stairway Design

Build soffit of 7-8-in. shiplap laid horizontally on 2-in. x 6-in. bearers, supported by 4-in. x 4-in. headers on 4-in. x4-in. shores, placed as weight and length of stairs require. The shiplap should extend 6 inches past the stair line on both sides, then nail a 2-in. x 6-in. flat to clear stair line 2 inches.

Lay out the risers and treads on smooth side of 2-in. plank stringers, risers to slant in or toward their slab ½ in. if without nosings; place the stringers on the slab and set the risers, beveled at the bottom to allow free use of finishing tools. Risers are to correspond in length to finished rise and are set flush with the finished tread.

Place one 4 x 4, or more, if width of stair requires, longitudinally in the center of the stairs, and wire firmly through the slab to headers beneath to prevent floating; use 4 x 4's as clamps across stringers and wired to headers, spacing to be determined by thickness of slab and width of stairs.—Contract Record.

Pressed Brick Company Has Fine Display

The Los Angeles Pressed Brick Company has completed its new display room on the sixth floor of the Frost building, Los Angeles, and architects, contractors, owners and prospective builders are invited to visit the display and acquaint themselves with the newest and most popular lines of face brick, roofing tile, hollow tile, mantel and quarry tile. Those who have seen the exhibit say it surpasses in splendor the display at the Panama-Pacific Exposition, which was awarded a grand prize.

The entire floor has been taken over by the company, having been remodeled to suit the needs of growing business and the keener interest of the building public in the artistic possibilities of clay products. The arrangement of these various commodities into an artistic but practical exhibit was no small matter. How well this has been done can best be seen by a visit to the display room.

To all who have seen it the room is a revelation from the standpoint of harmonious color blending and beautiful and practical workmanship.

Announcement

By mutual consent the firm of Butte Engineering & Electric Co. has been dissolved, and all assets are equally distributed between the partners. Mr. Paul C. Butte, the founder of this concern, will continue electrical construction work and manufacturing under the firm name of Butte Electric and Manufacturing Co., 534 Folsom street, San Francisco. Telephone Douglas 145.

Awarded Gold Metal

The W. S. Ray Manufacturing Co., Inc., was awarded a gold medal over all competitors at the California Industries Land Show, held in the San Francisco Municipal Auditorium October 4-19th. The award was for the company's exhibit of crude oil burners. The Ray Company has lately established branch offices in all the principal cities of the East as well as abroad.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC.

(Required by the Act of Congress of August 24, 1912),

Of The Architect and Engineer, published monthly at San Francisco, California, for October 1, 1919.

City and County of San Francisco—ss.

Before me, a Notary in and for the State and County aforesaid, personally appeared A. I. Whitney, who, having been duly sworn according to law, deposes and says that she is the manager of The Architect and Engineer, and that the following is, to the best of her knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher....The Architect and Engineer, Inc., 627 Foxcroft Bldg., San Francisco
Editor.....F. W. Jones 627 Foxcroft Bldg., San Francisco
Business Manager.....A. I. Whitney, 627 Foxcroft Bldg., San Francisco

2. That the owners are: The Architect and Engineer, Incorporated, 627 Foxcroft Bldg., San Francisco; A. I. Whitney, 627 Foxcroft Bldg., San Francisco; F. W. Jones, 627 Foxcroft Bldg., San Francisco.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

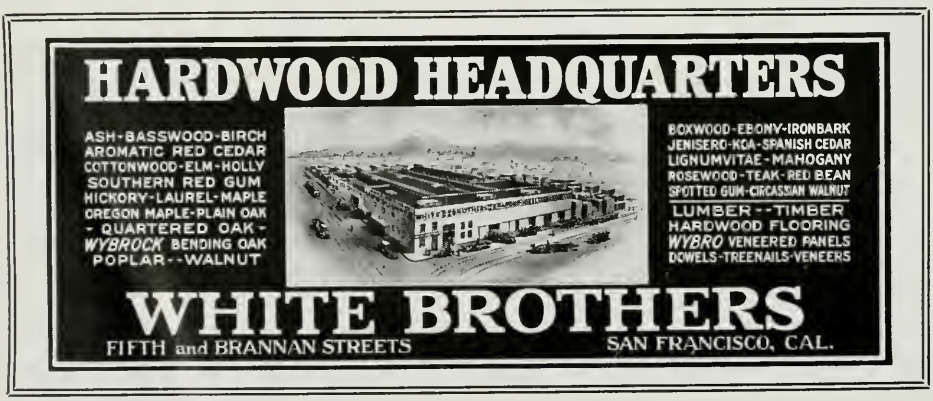
A. I. WHITNEY,
Manager.

Sworn to and subscribed before me this 29th day of September, 1919.

[SEAL] H. B. DENSON,

Notary Public in and for the City and County of San Francisco, State of California.

(My commission expires December 20, 1922.)



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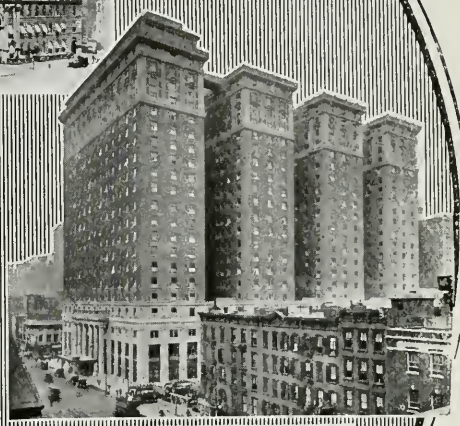

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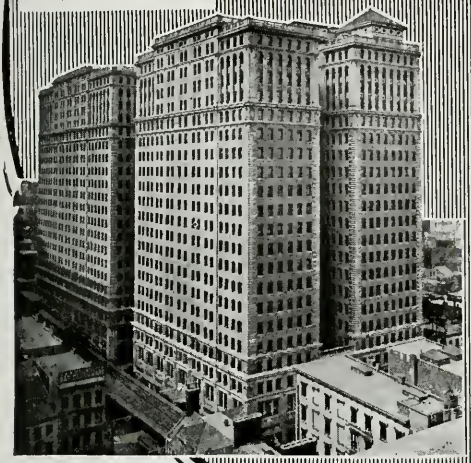

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"Use Stanley Ball Bearing Butts for Permanence."

Why are these buildings equipped with STANLEY Ball Bearing Butts?

THE hotel, office building and apartment house illustrated above represent immense investments. The architects who planned them and the contractors who erected them were required to put into these structures materials of quality and durability.

They built for permanence. So the natural thing to do was to equip the doors of these buildings with Stanley Ball Bearing Butts.

The first cost of Stanley Ball Bearing Butts is their last. They never have to be reset or replaced. They never wear down at the joints — which would cause the door to scrape over its threshold and the bolt of the lock to get out of line with its strike. They are made for permanence.

Stanley Butts are carried in stock by the leading builders' hardware stores everywhere. If you would like to know more about them send for booklet AE10.

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The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

What is the Matter with the Contracting Business?

F. E. Davidson, A. I. A., Tells Master Builders of Wisconsin, in an Address, That Business Mortality of Contractors is Too High

BASED upon observation, it is my belief that the average contractor is ill-equipped successfully or efficiently to perform his functions in our business world. His training has not been sufficient. We have no colleges or schools of contracting. The average contractor enters business, not only with insufficient training and preparation, but with inadequate capital, and often the only asset he has when entering business life is an acquaintance with some architect's superintendent, which permits him to secure a set of plans and specifications and submit a bid as a full-fledged, financially responsible and experienced contractor; and he has been able to get away with it. Why? Because the average owner will usually consider only the lowest bid, because forsooth the bonding companies are ever ready to write a bond on anything and for any purpose.

Everyone knows that contractors and material dealers are children in arms when considered as business men. Else why should our state legislatures provide lien laws to protect their credits, a protection not given to any other business on earth?

As to our lien laws, every mechanic's and material man's lien law should be wiped off our statute books and the building business put on the same footing of common honesty and fair dealing that is the rule of conduct in any other successful business.

Is it not time that you as contractors ceased to be regarded as wards of the state and unable to conduct your own business? Today the law views you as a class of men unable to judge credits, or even able to collect your own accounts or to pay your own bills, and to aid the great gamble allows the bonding companies to speculate on your ability to conduct even a simple financial transaction.

One of the vital questions which our nation must answer and which you individually and as an organization may do your part in answering, a question that is now and in the next few years will be one of the most important that any people have ever been called upon to face, is the great problem of conserving the man-power of the nation.

The contractor who is able to maintain a high morale in his organization is able to do work cheaper and better than the contractor who takes no interest in his workmen. The really successful contractor is he who knows men, who knows their problems and can sympathize with them in their troubles, who considers even the laborer on the job as his partner in business, and recognizes that the time has arrived when it is better to consider labor as a comrade than as an enemy. A contractors' association such as yours will do well if it heeds the "handwriting on the wall" that labor has the right to participate in the management of construction and that the right of organized and collective bargaining has been established for all time as one result of the world's war. Co-operation was the great lesson taught by the war. You as contractors and we as architects must recognize that the co-operation of contractors, workmen and architects is necessary to give perfect service to those who employ us. Let me say further that the contractors of the future will be compelled to give a service not dreamed of in your philosophy. I expect to see the day when contracting, instead of being a matter of barter and exchange, will develop professional aspects, and that when you sign a contract you will be expected and compelled to furnish service to the owner in addition to delivering to him so many carloads of brick or so many feet of lumber assembled in a certain way.

The successful contractor of the future will be a better business man than he is today. He will not only know how to keep cost accounts, progress reports, etc., but he will also learn how to reduce the labor turn-over and prevent 85 per cent of the accidents now chargeable to building operations.

In conclusion, let me say that if you have no brains, hire some. Brains are the poorest paid and the scarcest commodity in the world today. Organize

H. S. Dawson Storage Warehouse, Stockton, Cal., Glenn Allen, Architect

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your work, give your employees an interest with you or at least see to it that they are interested in your welfare. Prove to them that their best interests are also your own. Increase the morale of your working force. Don't regard your competitor as an enemy, but as your brother. Talk over your problems with him. Remember that he who can devise a means of reducing cost is a benefactor of his race. Remember that every preventable loss, whether in materials or man-power, is a national loss, and above all, remember that whatever you may do affects your neighbor, that in the end his interests are your interests.

Planning of Workingmen's Houses

One of the most complete reports on the subject of planning of houses for workingmen ever issued in this country has just been published by the United States Housing Corporation of the Department of Labor.

The report deals exclusively with the architectural, town planning and engineering divisions of the Corporation. It contains 544 pages and more than 200 cuts of house plans and elevations. It also contains the details of the town planning, architectural and engineering features and the statistics of 26,000 houses, the number originally planned by the Housing Corporation for war needs.

It contains a description of the architectural features of each of the projects that was planned.

The Architectural Division made a particular study of economical house plans. Detailed attention has been given to the designing of houses costing from $1,800 to $4,000. Many of these plans bring out important economies; yet the houses are most convenient, homelike and attractive. Particular attention was given to standardizing plans and materials and cutting out of unnecessary fixtures.

In each of the projects only four or five house plans were used. By reversing these plans, by using the same plan in detached and semi-detached houses, by using a pitched roof on one and a gambrel roof on another, by using clapboards on some and shingles or stucco on others, it was possible with these four or five plans to develop a village that had none of the monotony of the typical factory town but instead one that presented a most pleasant aspect.

The report will be of much practical use to housebuilding corporations, architects, contractors, manufacturers who are planning to build and also to real estate men. It may be obtained at the Superintendent of Documents, Government Printing Office, Washington, D. C., for $1.50.

SPECIFY BY OAK TRADE MARK
FMA USA
OAK FLOORS
(For Everlasting Economy)
See Sweet's Catalog, Page 319

A thought which we would like to submit for the consideration of the Architectural profession is this: Why not, in the construction of CHURCHES, take more frequent advantage of the beauty, the cleanliness, the attractiveness, the color, the welcoming effect of *Oak Flooring?*

The cost certainly permits it and the certain approval of the congregation more than justifies it.

Is this not worth thinking about?

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The Labor Problem—David Harum's Motto Can No Longer Be Applied

By L. C. WASON *

IT seems to me that a new era in the handling of labor has come to stay, one in which there must be more co-operation between the employer and employe than in the past, and in which the employe must be considered more of a partner in the business than as a piece of machinery to be handled at will by the employer, as was the case a few years ago.

Some time ago there was a novel that was very popular for awhile, named "David Harum." David was a horse trader and his motto was, "Do unto others as they would do to you, but do it fust." Taking that motto and applying it to present conditions, I would say that "Do unto others as you would have them do to you, but do it first," is the rule which must govern the relations between capital and labor, employer and employe today. This is the principle which the Aberthaw Company is trying to carry out in the handling of its men.

One of the chief duties of our Employment Department is welfare work among our men. Continuous effort is made to keep working conditions healthful and pleasant. We have a safety man on the job to see that there are proper safeguards against accident. We look out for the injured men to a greater extent than the insurance company does.

On one occasion we paid the funeral expenses of one of our men and gave the workmen time off for the funeral where the fellow who was killed had endeared himself very much in the hearts of his men. We heard from this from several sources long afterwards and we have found that our old employes in one city will leave other employment to come to us and many will follow us from city to city rather than work for other contractors. We believe this interest must be taken in the men, that they really appreciate it, and that it is practical business. Yet care must be taken that this is not carried to the point of interfering with a man's personal affairs with the idea of trying to help him or doing charitable work.

One of the most vital items in the care of this part of the work is properly handling and educating the gang boss who is in direct touch with the actual workmen. The opinion which the actual workman forms of a company and its management is largely gained by the methods the gang boss uses in handling them. We are now arranging frequent conferences during the lunch hour, at which we provide the feed, between the general superintendent from Boston, the job superintendent and the gang bosses to talk over matters and make them see that they must handle their men as fellow human beings.

* With the Aberthaw Construction Company, which would have built the big ship plant in Alameda but for the abrupt ending of the war.

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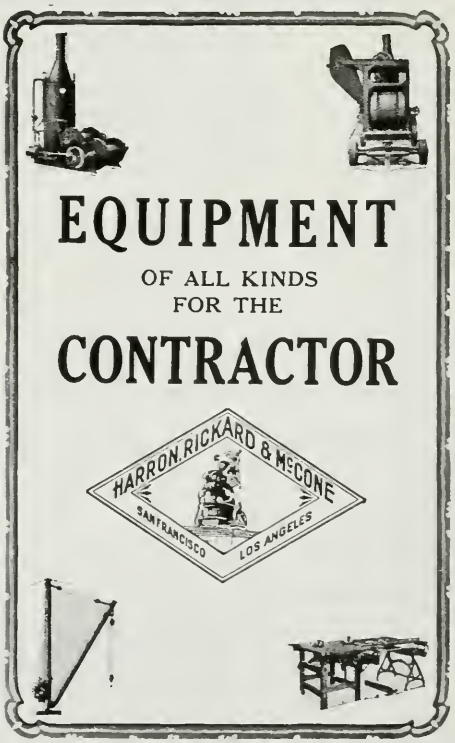

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Sterling Motor Trucks Are Used by Live Contractors

A MOST interesting feature of the motor truck business is the conversion of a class of contractors who, when the truck salesman calls on them, state positively: "It can't be done."

Sterling 5-Ton Truck, Showing Quick Method of Unloading.

The Edward R. Bacon Company recently sold two Sterling Heavy Duty Motor Trucks to Mr. Adam Arras, one of San Francisco's well-known contractors. Mr. Arras had hitherto used horses exclusively and the first Sterling truck of 3½ tons capacity with horizontal hydraulic hoist and steel dump body was purchased under protest, but after using this for about three months Mr. Arras placed his order for a 5-ton Sterling with similar equipment and now states it is a daily source of wonder to him that he was able to run his business without motor trucks.

Contractors Should Not Furnish Plans to Owners, Say Architects

In reporting the formation of a new Architects and Builders' organization in San Francisco last month, a serious omission was inadvertently made in listing the rules adopted at the meeting. Clause No. 5 should have read: "*Contractors should not furnish plans to owners,* and should not furnish plans for heating, electrical or mechanical equipment or layouts on which bids are to be submitted by other contractors."

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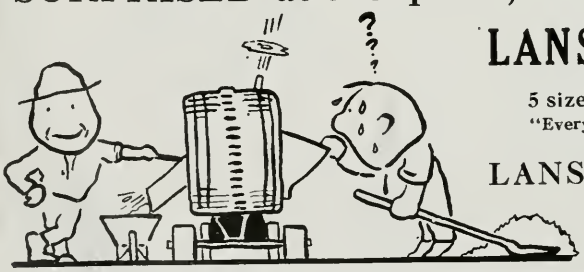

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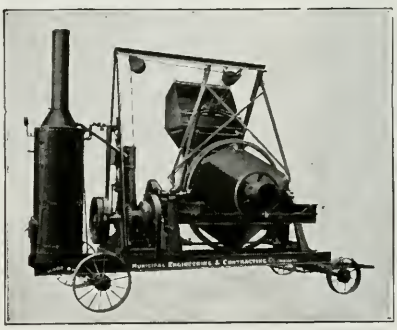

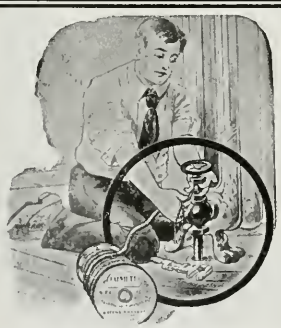

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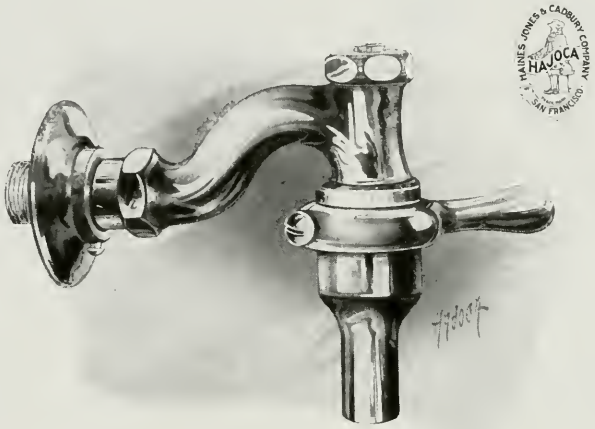

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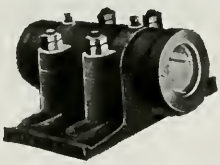

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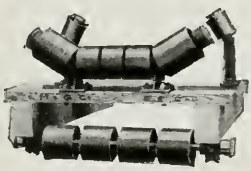

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Fixing Rental of Contractors' Equipment

It is rather difficult to fix an arbitrary price on the rental of such outfits as saw rigs and concrete mixers, and the only thing to do is to figure the thing out on such a basis as to pay for the machines and show a profit for your investment.

For instance, suppose you have a machine which costs $200. The first item of expense which will enter into the rental charge will be interest on your investment, which at 6 per cent would be $12 per year. The next thing to take into consideration is the probable life of the machine. If such a machine will give good service for five years, then the original cost must be spread over five years, making an annual item of $40. Then there will be other miscellaneous items, such as repairs, oil, moving from place to place, etc. Just for the purpose of illustration we will say that these will add up to $48 a year, making the total cost for the year $100.

If the machine is in actual service for two hundred days a year, this will mean that you will have to get fifty cents a day for it in order to come out even; but, of course, you want to more than come out even, so that this should probably be doubled. This will depend somewhat, of course, on the length of time the machine stays on each job. If, for instance, it is moved around frequently from one small job to another it will be necessary to include a greater rental charge than where it stays continuously on one job for some length of time.

Butte Electrical Equipment Co.

The Butte Electrical Equipment Company succeeds the Butte Engineering and Electric Company in its electrical construction and merchandising business, except manufacturing crane and bridge, and will continue at the same address as formerly —530 Folsom street, San Francisco. Mr. C. F. Butte, who with his brother, Mr. Paul Butte, were partners in the Butte Engineering & Electric Company, becomes sole owner and manager of the Butte Electrical Equipment Company, which will specialize in electrical contracting and power installations.

Mr. C. F. Butte has been identified in a prominent way with the electrical contracting business in San Francisco for a number of years and the Butte company has made some notable installations in that period. Since the San Francisco fire in 1906 contracts that have been filled include the City and County Hospital, Mount Zion hospital, M. J. Brandenstein building, Physicians' building, Hallidie building, residences of Mr. A. B. Spreckels, Mr. Templeton Crocker, and Senator James D. Phelan; Pacific foundry, McKay foundry, Coliseum theatre, etc.

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ENAMELED PRODUCTS

In The Home

"I call this my model Armco Iron kitchen." the housewife said. "That stove, that refrigerator, that kitchen cabinet, and that finely polished table-top are all Armco Iron Enameled Products."

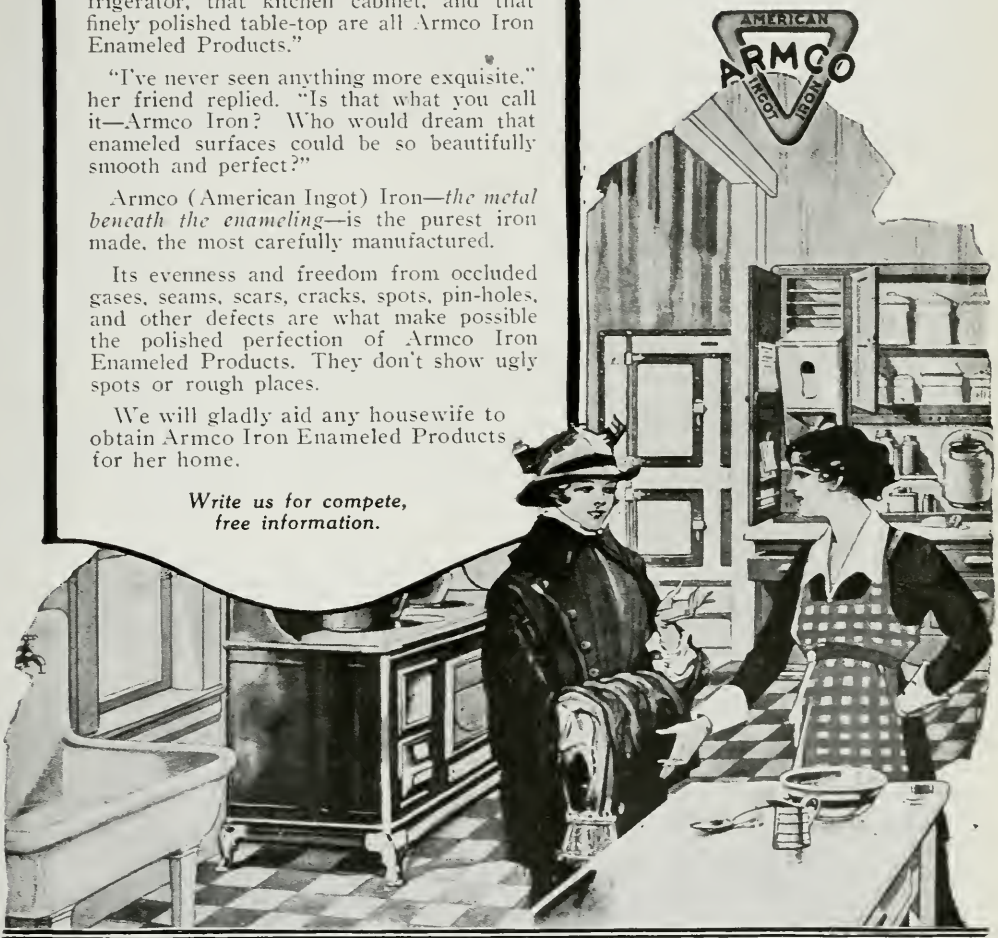
"I've never seen anything more exquisite." her friend replied. "Is that what you call it—Armco Iron? Who would dream that enameled surfaces could be so beautifully smooth and perfect?"

Armco (American Ingot) Iron—*the metal beneath the enameling*—is the purest iron made, the most carefully manufactured.

Its evenness and freedom from occluded gases, seams, scars, cracks, spots, pin-holes, and other defects are what make possible the polished perfection of Armco Iron Enameled Products. They don't show ugly spots or rough places.

We will gladly aid any housewife to obtain Armco Iron Enameled Products for her home.

Write us for compete, free information.



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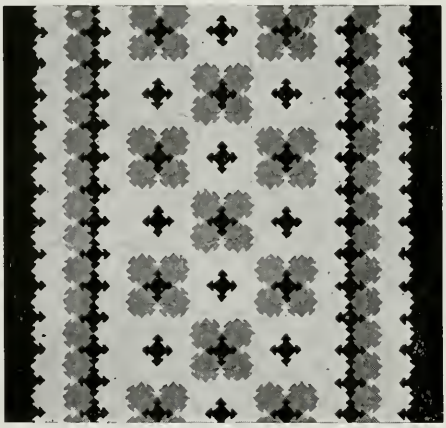

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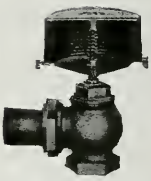

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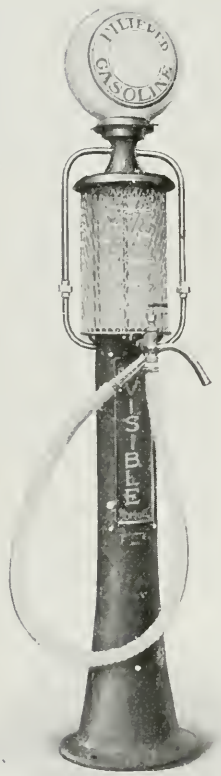

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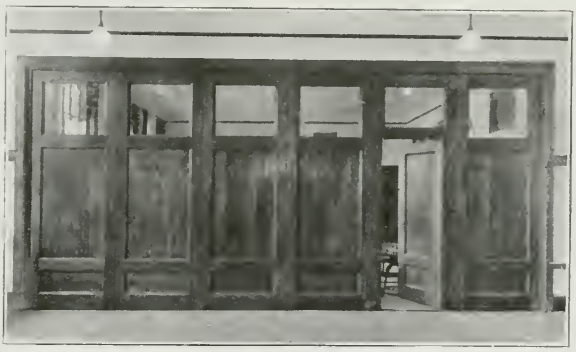

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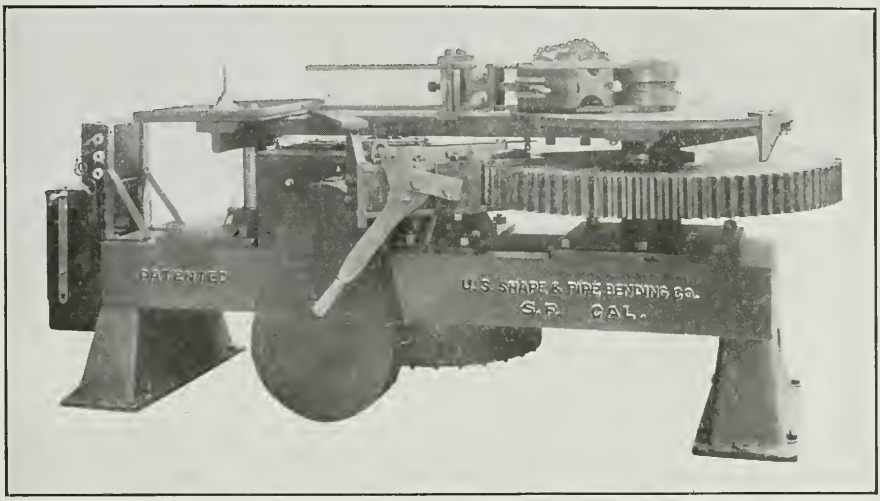

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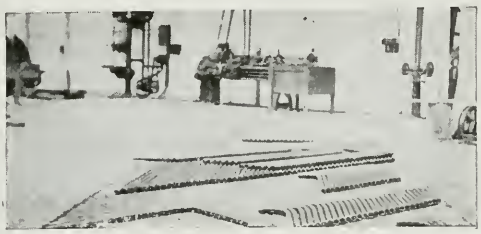

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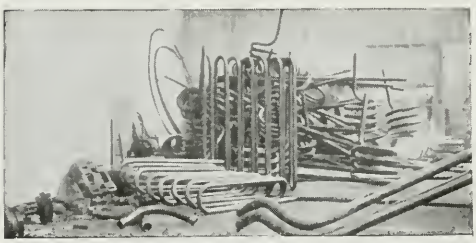

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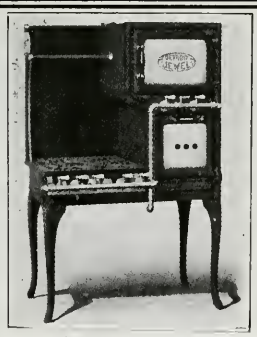

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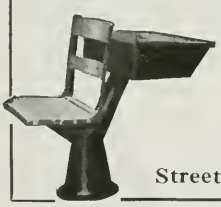

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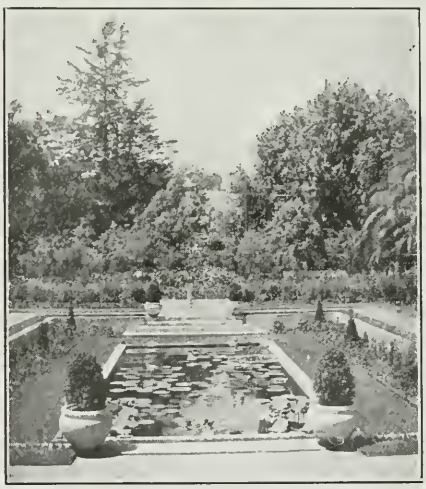

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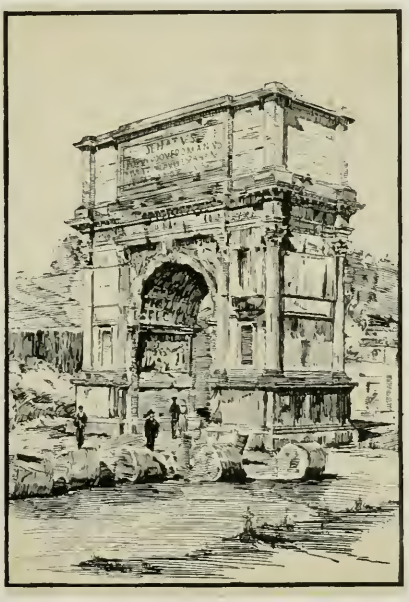

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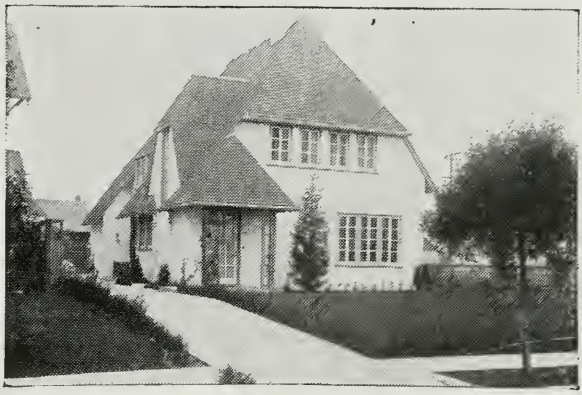

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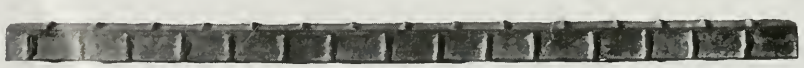
&  Co.

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- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.
- H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric. L. A. Norris Co., 140 Townsend St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)

Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.

CONCRETE SURFACING

"Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONDUITS

Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL

Barrett & Hilp, Sharon Bldg., San Francisco.
Herbert Beckwith, 412 Call-Post Bldg., San Francisco.
K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
R. W. Littlefield, 565 Sixteenth St., Oakland.
Unit Construction Co., Phelan Bldg., San Francisco.
Larsen, Sampson & Co., Crocker Bldg., San Francisco.
J. D. Hannah, 142 Sansome St., San Francisco.
Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
A. D. Collman, 110 Jessie St., San Francisco.
Del Favero & Rasori, 110 Jessie St., San Francisco.
Clinton Construction Company, 140 Townsend St., San Francisco.
Monson Bros., 1907 Bryant St., San Francisco.
W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
A. Knowles, Call-Post Bldg., San Francisco.
T. B. Goodwin, 110 Jessie St., San Francisco.
Lange & Bergstrom, Sharon Bldg., San Francisco.
McLeran & Peterson, Hearst Bldg., San Francisco.
Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT

Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
Harron, Rickard & McCone, Townsend St., San Francisco.
Lansing Company, 338 Brannan St., San Francisco.
Garfield & Co., Hearst Bldg., San Francisco.
Smith, Booth-Usher Co., Rialto Bldg., San Francisco, and 228 Central Ave., Los Angeles.

CONVEYING MACHINERY

Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
P. H. Reardon, 57 First St., San Francisco.

CRUSHED ROCK

California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND

Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

DAMP-PROOFING COMPOUND (Continued)

Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
"Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS

Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS

Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
Crane Company, San Francisco, Oakland, and Los Angeles.
Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS

Spencer Elevator Company, 173 Beale St., San Francisco.
M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS

Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
McPage, McKenny Co., 589 Howard St., San Francisco.
Newbery Electrical Co., 413 Lick Bldg., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Globe Electric Works, 1959 Mission St., San Francisco.
M. E. Ryan, Redwood City, Calif.
Rex Electric & Engineering Co., 253 Minna St., San Francisco.
H. S. Tittle, 766 Folsom St., San Francisco.
Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER

The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT

Sierra Electric Company, 515 Market St., San Francisco.
Garnett, Young & Co., 612 Howard St., San Francisco.

D. N. & E. WALTER & CO.

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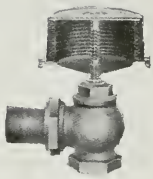

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco,

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- H. N. McNab, 2307 17th Ave., Oakland.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 509 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS
- Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

FUMELESS GAS RADIATORS
- Manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
Fuller & Goepp, 34 Davis St., San Francisco.
W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
J. O'Shea, 2100 17th St., San Francisco.

GRANITE
California Granite Co., Gen. Contractors' Ass'n, San Francisco.
Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
California Building Material Co., new Call Bldg., San Francisco.
Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
The Stanley Works, New Britain, Conn.
Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
Inlaid Floor Co., 600 Alabama St., San Francisco.
Parrott & Co., 320 California St., San Francisco.
White Bros., cor. Fifth and Brannan Sts., San Francisco.
Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Mangrum & Otter, 827-831 Mission St., San Francisco.
James & Drucker, 450 Hayes St., San Francisco.
James A. Nelson, 509 Sixth St., San Francisco.
Ideal Heating & Engineering Co., 192 Erie St. San Francisco.

HEATING AND VENTILATING MATERIAL, ETC. (Continued)
Illinois Engineering Co., 563 Pacific Bldg., San Francisco.
William F. Wilson Co., 328 Mason St., San Francisco.
Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
Scott Company, 243 Minna St., San Francisco.
John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
Mott Company of California, 553 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.
Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

ICE MAKING MACHINES
Vulcan Iron Works, San Francisco.
Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
"Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INTERIOR DECORATORS
Beach-Robinson Co., 239 Geary St., San Francisco.
The Tormey Co., 1042 Larkin St., San Francisco.

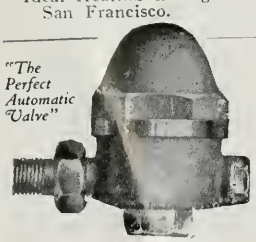
KITCHEN CABINETS
Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
James A. Nelson, 509-11 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECTS
Neil T. Childs Co., 68 Post St., San Francisco.

LANDSCAPE GARDENERS
MacRorie-McLaren Co., 141 Powell St., San Francisco.



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ARCHITECTS' SPECIFICATION INDEX—*Continued*

LATHING MATERIAL
- Pacific Building Materials Co., 525 Market St., San Francisco.
- Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
- Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
- Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., O'Farrell and Stockton Sts., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
- George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
- California Redwood Association, 216 Pine St., San Francisco.
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Portland Lumber Co., 16 California St., San Francisco.
- Sunset Lumber Company, First and Oak Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San cisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

PAINTING, TINTING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
The Glidden Company of California, 123 Hooper St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
California Brick Company, Niles, Cal.

PENCILS
Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
A. Knowles, Call-Post Bldg., San Francisco.
MacGruer & Simpson, 180 Jessie St., San Francisco.
James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
P. H. Reardon, 57 First St., San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Dow-Herriman Co., 140 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC. (Continued)

Kinnear Steel Rolling Door Co., Pacific Building Materials Co., 525 Market St., San Francisco
Wilson's Steel Rolling Doors, Waterhouse-Wilcox Co., 523 Market St., San Francisco.

ROOFING AND ROOFING MATERIALS

Bender Roofing Company, Monadnock Bldg., San Francisco.
"Malthoid" and "Ruberoid," manufactured by Paraffine Companies, Inc., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.
Patent Vulcanite Roofing Co., Texas and 16th Sts., San Francisco.
H. H. Robertson Co., Hobart Bldg., San Francisco.

RUBBER TILING

New York Belting and Packing Company, 518 Mission St., San Francisco.

SAFETY TREADS

Pacific Building Materials Co., 525 Market St., San Francisco.

SAND

Del Monte White Sand, Del Monte Properties Co., 401 Crocker Bldg., San Francisco.

SCENIC PAINTING—DROP CURTAINS, ETC.

The Edwin H. Flagg Scenic Co., 1638 Long Beach Ave., Los Angeles.

SCHOOL FURNITURE AND SUPPLIES

C. F. Weber & Co., 985 Market St., San Francisco; 512 S. Broadway, Los Angeles.
Rucker-Fuller Desk Company, 677 Mission St., San Francisco.

SHEATHING AND SOUND DEADENING

Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.
The Paraffine Companies, Inc., 34 First St., San Francisco.

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Power & Pike Co., 22-24 Main St., San Francisco.

SHINGLE STAINS

Cabot's Creosote Stains, sold by Pacific Building Materials Co., 525 Market St., San Francicco.
Fuller's Pioneer Shingle Stains, made by W. P. Fuller & Co., San Francisco.
Argonaut Shingle Stains. The Glidden Co., 123 Hooper St., San Francisco.

SKYLIGHTS

H. H. Robertson Co., Hobart Bldg., San Francisco.

STEEL HEATING BOILERS

California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.

STEEL TANKS, PIPE, ETC.

Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Western Pipe & Steel Co., 444 Market St., San Francisco.

STEEL AND IRON—STRUCTURAL

Central Iron Works, 621 Florida St., San Francisco.
Dyer Bros., 17th and Kansas Sts., San Francisco.
Golden Gate Iron Works, 1541 Howard St., San Francisco.
Mortenson Construction Co., 19th and Indiana Sts., San Francisco.
Pacific Rolling Mills, 17th and Mississippi Sts., San Francisco.
Palm Iron & Bridge Works, Sacramento.

STEEL AND IRON—STRUCTURAL (Continued)

U. S. Steel Products Co., Rialto Bldg., San Francisco.
Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
Vulcan Iron Works, San Francisco.
Western Iron Works, 141 Beale St., San Francisco.

STEEL PRESERVATIVES

Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

STEEL REINFORCING

Badt-Falk & Co., Call-Post Bldg., San Francisco.
Pacific Coast Steel Company, Rialto Bldg., San Francisco.
Southern California Iron & Steel Company, Fourth and Mateo Sts., Los Angeles.
Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
W. S. Wetenhall Co., 725 Second St., San Francisco.

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Kinnear Steel Rolling Door Co., Pacific Building Materials Co., agents, Underwood Bldg., San Francisco.
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles.

STEEL SASH

Bayley-Springfield solid steel cash, sold by Pacific Building Materials Co., 525 Market St., San Francisco.
"Fenestra," solid steel sash, manufactured by Detroit Steel Products Company, Detroit, Mich. Direct factory sales office, Foxcroft Bldg., San Francisco.
U. S. Metal Products Company, 555 Tenth St., San Francisco.

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Champion and California steel brands, made by Western Iron Works, 141 Beale St., San Francisco.

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S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
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Direct Line Telephone Co., 320 Market St., San Francisco.

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Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

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Gladding, McBean & Co., Crocker Bldg., San Francisco.
United Materials Co., Crossley Bldg., San Francisco.

TILE WALLS—INTERLOCKING
Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.

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P. H. Reardon, 57 First St., San Francisco.

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Crane Radiator Valves, manufactured by Crane Co., Second and Brannan Sts., San Francisco.
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Great Western Supply Company, 549 Howard St., San Francisco.
H. Mueller Mfg. Co., 635 Mission St., San Francisco.
W. E. Mushet Co., 502 Mission St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

VALVE PACKING
N. H. Cook Belting Co., 317 Howard St., San Francisco.

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W. P. Fuller Co., all principal Coast cities.
R. N. Nason & Co., San Francisco, Los Angeles, Portland and Seattle.
S. F. Pioneer Varnish Works, 816 Mission St., San Francisco.
The Glidden Company, 123 Hooper St., San Francisco.
Standard Varnish Works, 55 Stevenson St., San Francisco.

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C. F. Weber & Co., 985 Market St., San Francisco.
Western Blind & Screen Co., 2702 Long Beach Ave., Los Angeles.

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Pacific Porcelain Ware Company, 67 New Montgomery St., San Francisco.

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American Automatic Lock & Lift Co., 72 Fremont St., San Francisco. (Display at 77 O'Farrell street.)
Marshall & Stearns Co., 1154 Phelan Bldg., San Francisco.

WALL BOARD
"Amiwud" Wall Board, manufactured by The Paraffine Companies, Inc., 34 First St., San Francisco.

WALL BOARD (Continued)
"Liberty" Wall Board, manufactured by Key-Hold Plaster Lath Co., 148 Hooper St., San Francisco.

WALL PAINT
Nason's Opaque Flat Finish, manufactured by R. N. Nason & Co., San Francisco, Portland and Los Angeles.
San-A-Cote and Vel-va-Cote, manufactured by the Brininstool Co., Los Angeles.

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The Tormey Co., 681 Geary St., San Francisco.

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Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.
Pacific Building Materials Co., 523 Market St., San Francisco.
Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

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Kewanee Water Supply System—Simonds Machinery Co., agents, 117 New Montgomery St., San Francisco.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.

WHEELBARROWS—STEEL
Western Iron Works, Beale and Main Sts., San Francisco.

WHITE CEMENT
"Atlas White," see coast agencies, page 127.
"Medusa White," sold by Pacific Building Materials Co., Underwood Bldg., San Francisco.

WHITE ENAMEL
"Gold Seal," manufactured and sold by Bass-Hueter Paint Co. All principal Coast cities.
Velvet White Enamel. The Glidden Company, 123 Hooper St., San Francisco.
"Silkenwhite," made by W. P. Fuller & Co., San Francisco.
"Satinette," Standard Varnish Works, 55 Stevenson St., San Francisco.

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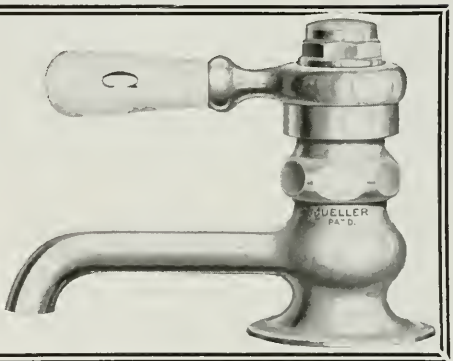

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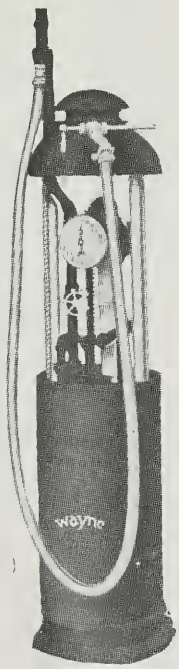

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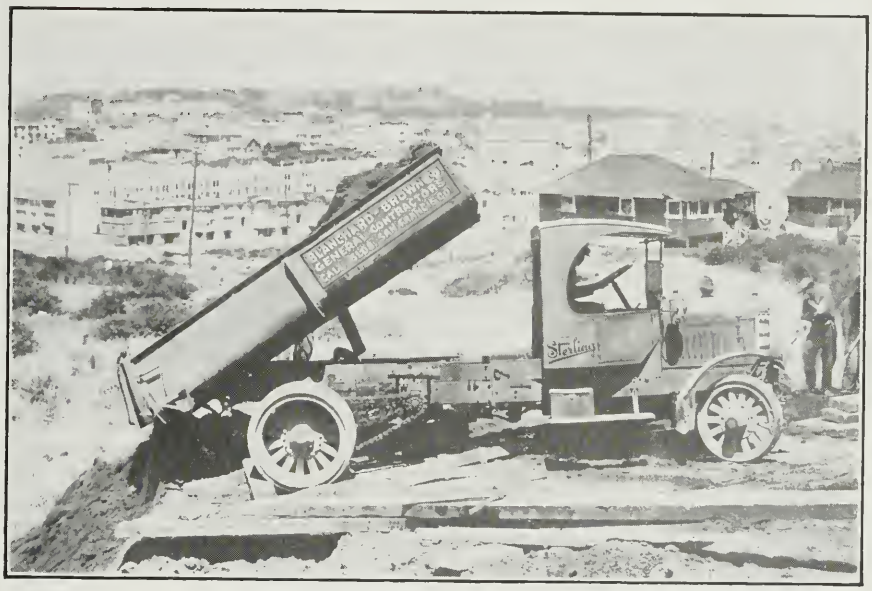

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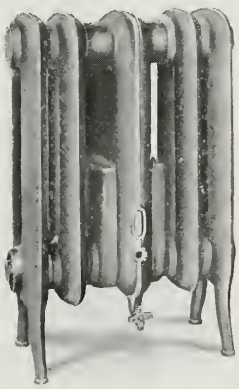

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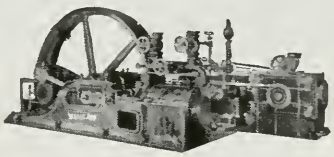

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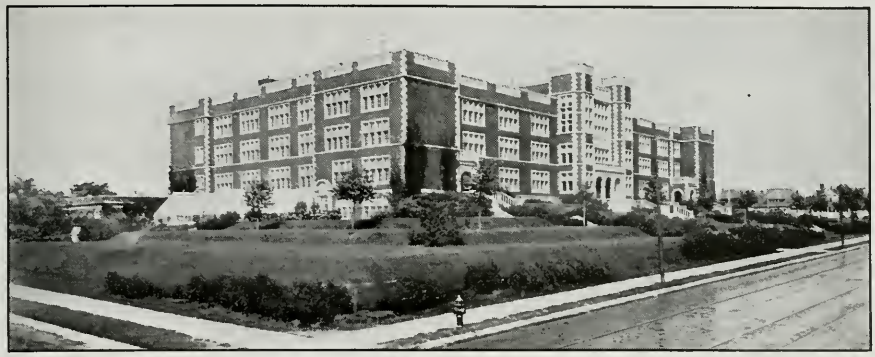

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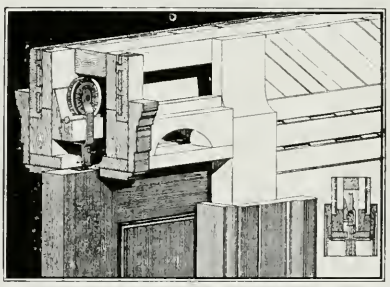

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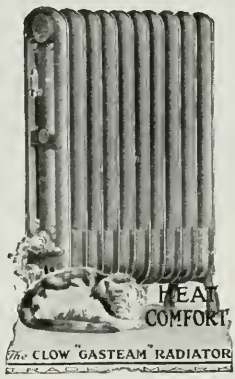

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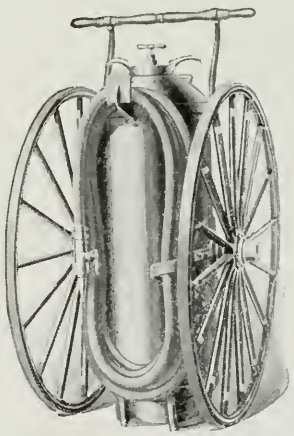

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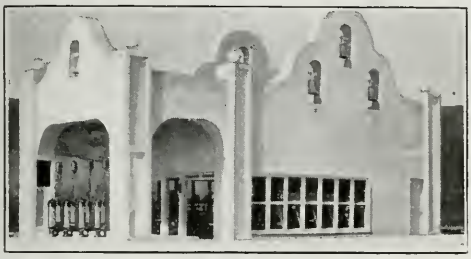

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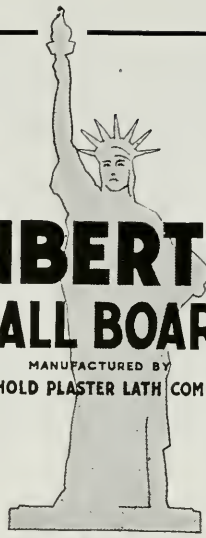

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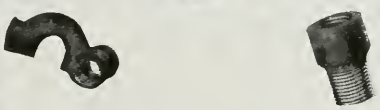

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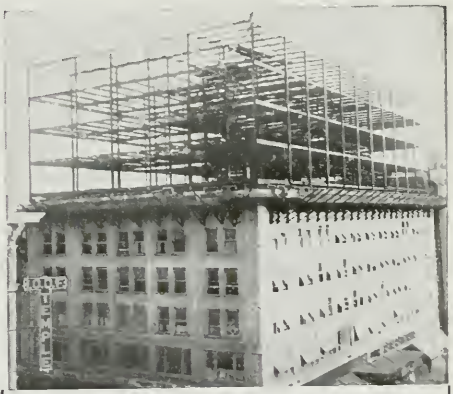

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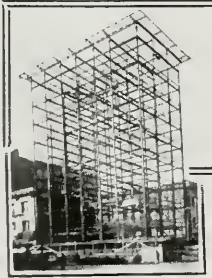

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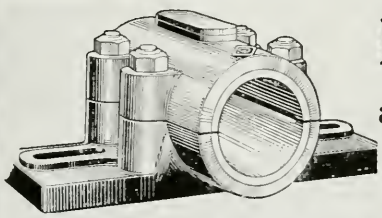

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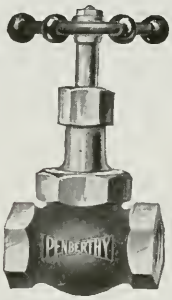

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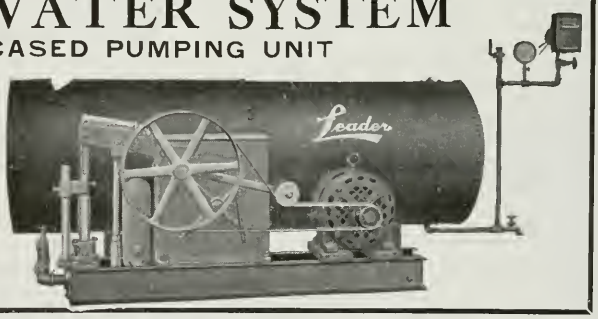

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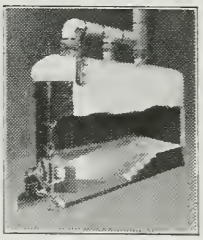

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The Architect and Engineer

Volume LIX. Incorporated Number 2.

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From a Dry-Point by Malcolm Osborne, R. E.

THE
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NOVEMBER, 1919 Vol. LIX. No. 2

An Architect's Post-War Impressions

By WILLIAM I. GARREN, Architect

THE impressions of a moment often become the convictions of a lifetime. They may be affected for good or bad by the most accidental coincidences; thus a slow cab in Paris may endanger an appreciation of Notre Dame, an absence of hotels and drainage systems at the front may give France a reputation for mud, and a few hours with a charming French girl may overcome the misery of two years of war. However, if we will hesitate to analyze before we judge, our efforts will bring us interest and enjoyment everywhere, and recurring memories throughout a lifetime will be a lasting pleasure.

The continual action, the excitement and the strain during the days of the war, cause one's mind to become mechanical. We go about our work knowing exactly the limits of our labors for each day. Doing as we are told, often knowing no reason, our sole interest is to keep busy in the hope that thus we may be doing our bit, and the sooner return home. Occasionally a brief quiet spell leaves time for play, and with sketch books we seek out some picturesque village with a church or ruin and try to draw. This we find difficult; it is contrary to orders to sketch along the front; at times an air battle or shelling interrupts an otherwise quiet place; and we cannot help but feel guilty of doing something that is not a war necessity.

The armistice finds us inactive in the devastated region of the Argonne. We are impatient to leave for home, but in these days a furlough or permission at the Riviera or in the Alps is all one may look forward to. It is then that the soldier enjoys two weeks of paradise, free from army cares. We return from these vacations thinking France a great country, impressed that it has been a great war, in fact the best war we have ever had.

Orders are received permitting some to depart for England to attend university. Eager to leave this devastated region, our enthusiastic group rolls its packs and a truck drives us to the Paris railway. Along the shell-torn roads refugees are now returning to what were once their homes. Here and there families can be seen building a shelter in an old ruin or putting an American one-ply paper roof over charred rafters. If you stop to speak with these people they will probably complain a little, and then with a gesture of bitterness and shrug of resignation will explain, "*C'est la guerre.*"

Paris is seething with masses of people and great moving crowds jostle on all the streets and boulevards. How different it seems from the day in July when, as we entered Paris, the long range gun was shelling and the people were incensed at the attack on their city. Lights are now bright on the streets and in the cafés as they have not been for four years. The spirit of reconstruction is written on the face of every person. A crowded train to Le Havre, a boat to Southampton, and we are on British soil.

At the docks we are greeted from the shore in English, our own language;

MAGDALEN TOWER AND BRIDGE, OXFORD
Sketch by William I. Garren

we say meaningless things merely to hear ourselves answered in a familiar tongue. After being in France and Germany, this is a most pleasant surprise, and we accept it as if we had not expected to be understood. The large docks and warehouses are orderly and clean; trains noiselessly enter and part with goods for the world's markets. Our special train of white coaches is filled, the compartments, neatly decorated and upholstered, are clean and comfortable. The trip through the country is now at every turn new and interesting. We pass miles of hedge-encircled farms. Low thatched and tile-roofed cottages form picturesque groups of farm buildings, old and new, and give a feeling of composition to each farm. Our train passes

over and under highways, for there are no grade crossings in England; at these crossings red brick arched bridges gracefully build up from their abutments.

As night draws on we sleep intermittently, awakening now and again at some town or city, or perhaps for a cigarette and a chat to compare our first impressions of England. There is an unbolting of compartment doors, a conductor shouting "London," a rushing of soldiers, and above all a Y. M. C. A. man with a megaphone shouting "This way, you Yanks." Thus

ABBEY OF ST. ALBANS, ENGLAND
Sketch by William I. Garren

it is in the early hours of a March morning we arrive in London. A mist hangs over the city; the ghostly forms of buildings as we ride along the streets bring up a confusion of thoughts. A dome, a tower, a church sets up a thrill; for here is the city of romance and history, the pulse of the English-speaking peoples of the world.

I might here explain our being in England. Through the efforts of the American Y. M. C. A. and the Army Educational Commission a post war period of education was arranged for the overseas men. Two thousand men were selected to attend British universities of their choice. The orders outlining our work contained much subtle wording of an elastic nature.

Our officers, past masters in diplomacy, insinuated that aside from being educated we owed something to our country, perhaps that we become acquainted with the Britisher, understand him and be better understood. So it was that as we went about our work the study of the English was of the essence of the contract.

After extensive traveling over the United Kingdom we were prepared for college, and the last week in April Americans with programs and curricula in hand made the Strand seem like the Berkeley campus on registration day. The University of London, like most British colleges, was at one time scattered, independently chartered, schools, but it is now combined under one faculty head; although, unlike Oxford or Cambridge, the University of London still differs from most American colleges Perhaps the greatest difference is due to a reserve maintained and an attitude of service to the

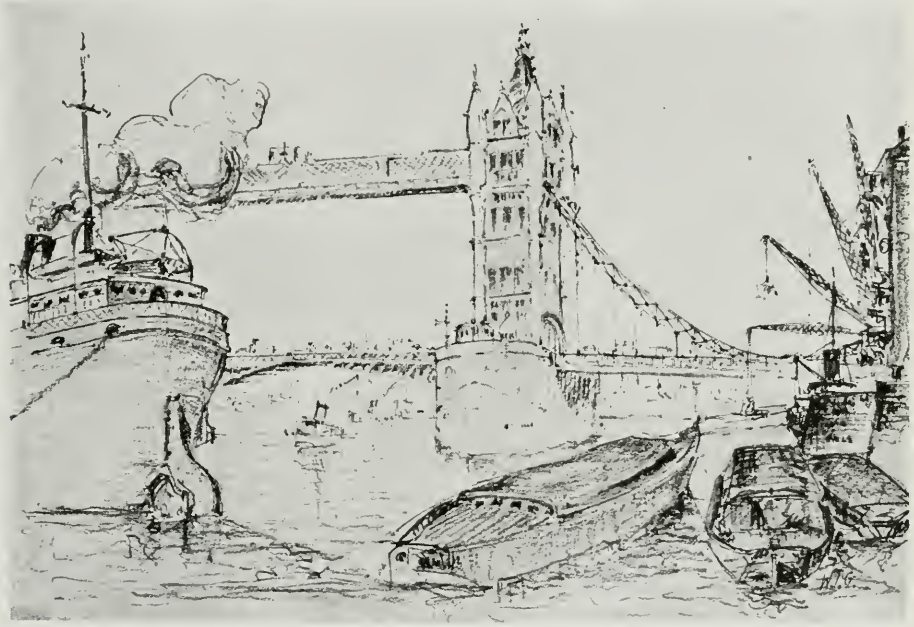
PARLIAMENT BUILDINGS AND WESTMINSTER, LONDON
Sketch by William I. Garren

student greater than service to the community at large. This tends to restrict university training to a few, but in lieu of a far-reaching apprenticeship system this may in the end better serve the needs of Britain than our system.

The writer was enrolled in a course in Housing and Town Planning, intended to train architects and engineers for carrying out the National Housing Programme enacted by Parliament. This programme provides for the subsidizing of home building to improve living conditions and to alleviate the existing scarcity of homes, as well as to make possible a gradual removal of slums in the large industrial centers. The work was very thoroughly taught under the capable direction of the British Architect, Professor A. D. Adshead. The lectures dealt with the theory of planning and design, aspects of the housing problem and present day conditions of slums in large cities. Details such as location, site, transportation, recrea-

tion, roads, drainage and domestic economics were thoroughly covered. In addition problems in design similar to our school problems were studied and rendered. The American students found the lectures and criticisms most helpful, but a working out of the problems found us out of sympathy with their practical application. This was due to peculiarities of living, laws, etc., in short to the fact that the whole economic scheme of British life differs in details of structure from ours, and housing schemes must bear a most intimate and human relation to the people they are designed to serve. The same lack of sympathy and interest could be found among the architectural students and students in others of the arts and science courses, which are similarily dependent upon and serve the people.

As compared with our colleges, the courses were found to be equally good, perhaps in some departments better than ours. The colleges, how-



THE TOWER BRIDGE, LONDON
Sketch by William I. Garren

ever, seem to lack the spirit and life, the rallies, the games with rooting and pageantry, the things that animate the American university and make it a part of the community and its people.

London has by now made its place in our daily life. We have learned to adjust our hours of work and pleasure to those of its people. We no longer cherish the idea that tea or afternoon teas are for the ladies and the rich, and 4 P. M. finds every American around a tea table chatting and pouring away the hours till dusk. We are now really living, proudly counting every day an increasing number of friends. Giving way to the coming of spring, the snow is replaced by green. The many small parks with their surrounding brick houses are now cheerful and everywhere on the crisp morning air the chirping of birds is heard. England in the spring time is one large garden and the beaches and inland rambles are beckoning to the city dweller. With murmurings of week-end and fortnight holidays

and garden teas this great dreary metropolis has warmed and now is like a huge rural community with a wealth of amusement for the visitor.

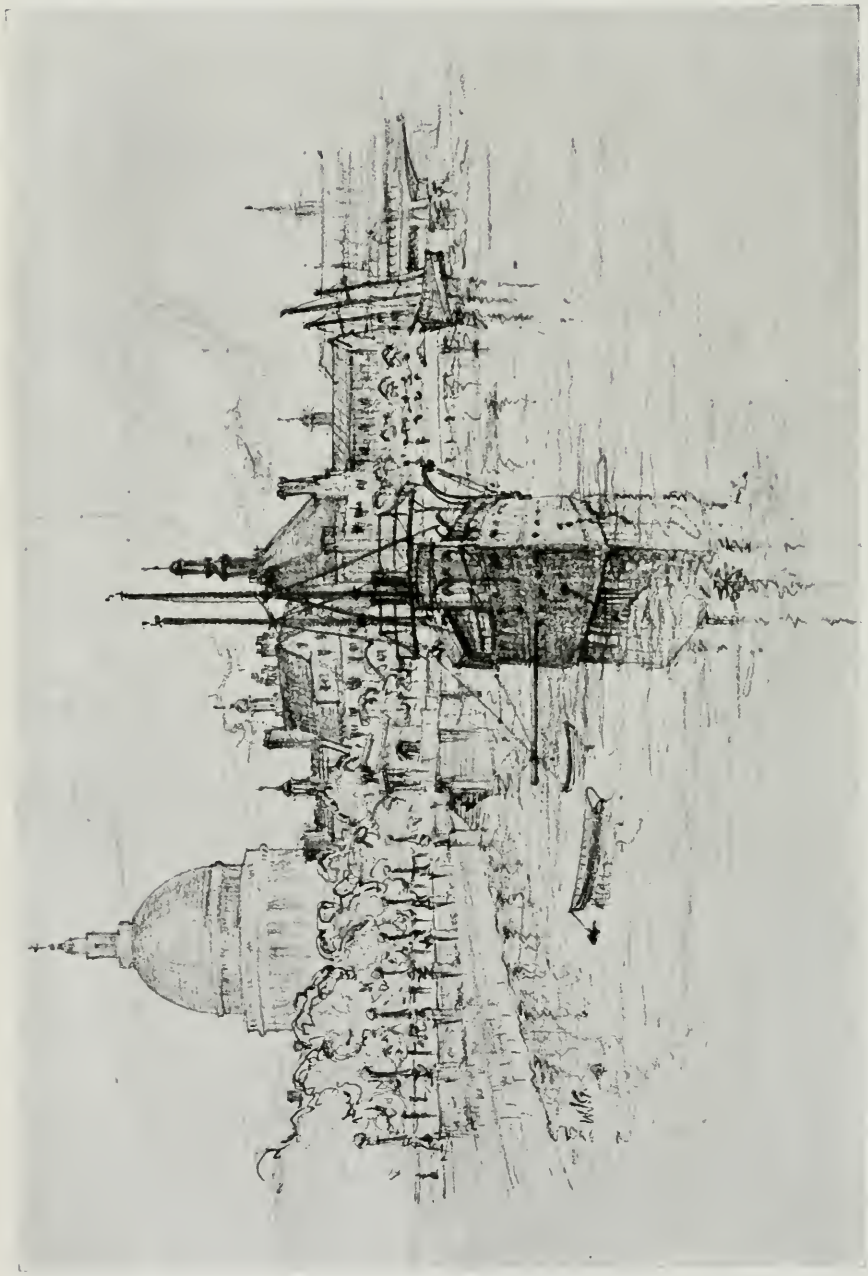
The art galleries, museums and traditional corners are a source of endless interest and open before us a veritable treasure chest of history. There is so much bearing a direct relation to early American history that it is difficult at times to grasp how the two countries have grown apart. We find upon close acquaintance with the people that a latent pride exists for America; often we are reminded that we are not in a foreign country, and are mentioned as among the Colonials visiting England. This feeling was expressed at a social gathering when a prominent Englishman said, "Friends, the American Eagle is a wonderful bird, and is there not something to be said for the hen that laid the egg?" The people talk little of the war, having suffered such great losses that the entire country is trying to forget. We have forgotten also and now find pleasure meandering about this wonderful city, and leaving each week-end to visit some cathedral, palace or near-by town. A desire to imprint on one's mind such associations and experiences finds expression on the part of the architect in the sketch-book; so with increasing interest I tried at odd times to make the drawings in pencil here published.

The Thames gives to London, as the Seine to Paris and the Rhone to Lyons, perhaps its greatest interest. A wide boulevard, the Embankment, stretches along the river from Parliament buildings to Southwark bridge, a distance of one or two miles. Numerous bridges with approaches from the Strand vault the Embankment and arch high across the river. The stream is alive with action, ships, smoke, whistles and reflections and majestically peering above the haze of all, the dome of St. Paul's watches over and is seen from many angles. Two sketches illustrate its aspect from across the river with docks, warehouses and ships, a contrast to Wren's masterpiece of the Renaisance. One sketch, "Along the Embankment," is from the St. Paul's side, and combining the river and esplanade with Southwark bridge crossing not far from one of the Guild halls, makes a most interesting composition and a more pleasing framing for the cathedral.

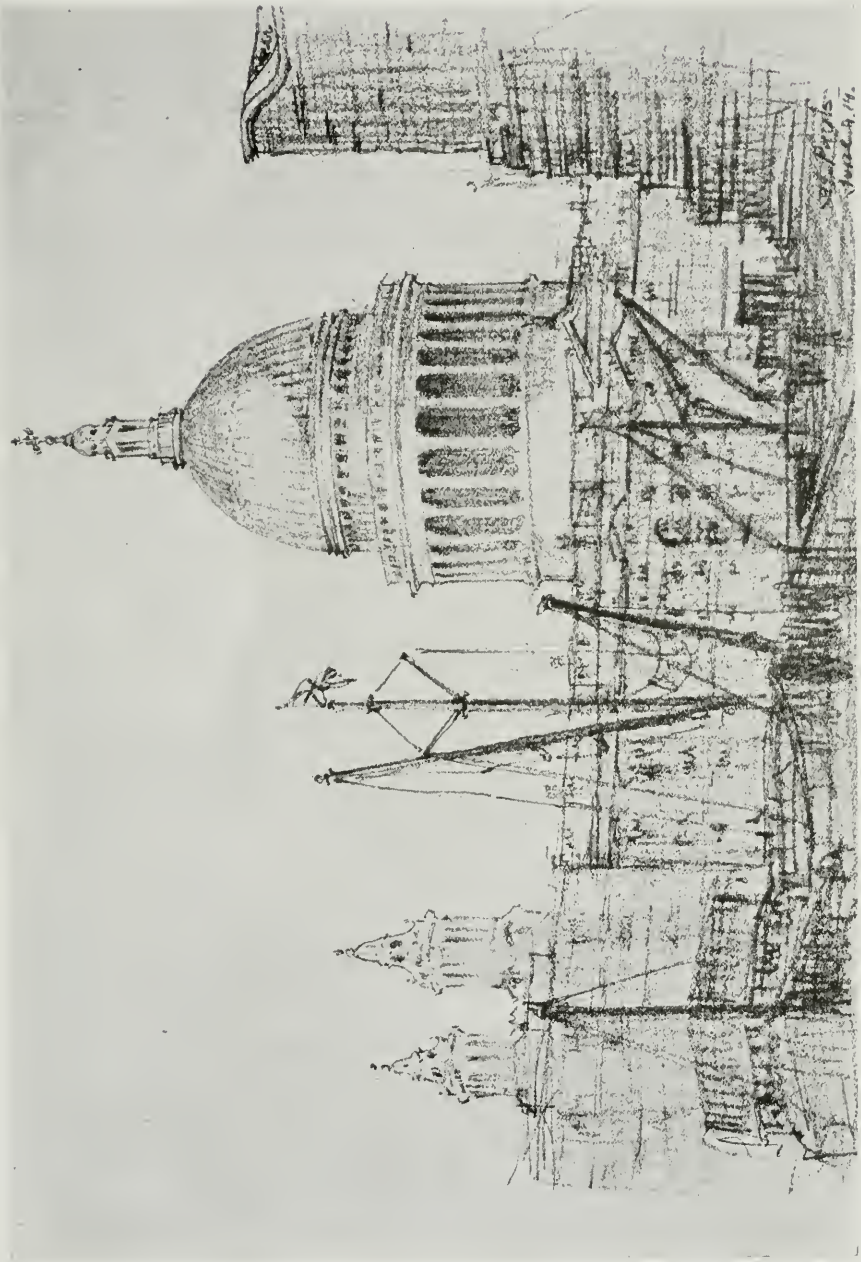
One may hear on the streets of any American city children singing, "London Bridge Is Falling Down," which reaches its climax when the falling is exemplified by two children dropping their clasped hands about the unfortunate child between. Not an unusual question for the American in London is, "Where is the London bridge?" It has been condemned and removed, but we are referred to the Tower bridge, famous the world over. The huge towers stand like the children at play, raising and lowering their heavy trussed arms, while tugs, barges and ships pass quickly as if to escape their envelopment. The bridge is the most vital traffic link in the system of the city's vehicular transportation.

Perhaps to the world the most familiar capital group known is the Westminster Parliament buildings. The perpendicular Gothic detail of the facades and towers is exquisitely carved, breaking the surfaces into most unique forms and plays of shadows. The stone, a soft grey buff, has mellowed and softened with age until wall, roof and window have grown together and stand a lasting monument to the amalgamation of the empire. However perfect in individual composition and fenestration are the buildings and towers, the group as viewed from across the river is bulky, mechanical in its arrangement and devoid of grace or beauty of mass. A sketch as shown here probably exaggerates to some extent these qualities. The cathedral and Abbey of Westminster are seen in the background. It is disappointing to see an interior beautiful in every detail, the high vaulting piers

ST. PAUL'S DOME AND
THE THAMES, LONDON
Sketch by William I. Garren



ALONG THE THAMES EMBANKMENT, LONDON
Sketch by William L. Garren



ST. PAUL'S FROM ACROSS THE THAMES, LONDON
Sketch by William L. Garren

of its nave and aisles echoing the best of English Gothic architecture, preceded by towers lacking in form and life, with buttressed walls stiff and formal, and all designed as if with T-square and triangle. There is not in most English cathedrals that close relation and equal beauty of interior and exterior found in the great French cathedrals.

I believe it can be said without fear of question that Oxford is the most picturesquely interesting university town one may visit. The town possesses a distinctly academic atmosphere, quite rural, built as if by the hand of one master architect. The Tudor style is here at its best; shops, houses and the colleges are alike except for pleasant interruptions here and there in some more playful motif of Inigo Jones or a gem by Wren in the Grand Style. There are thirty or forty colleges in all, most of them complete with the living quarters for professors and students, the small conference offices and the chapel and dining hall grouped around irregular courts with deep quiet cloisters connecting the parts. At each step a new picture composition is seen with sharply defining shadows playing over surfaces and reveals, and ivy clinging as if proud of its association. A small cluster of students are bowling on the green while a servant leaves the tray with a decanter and soda (that British institution) on a table nearby; this may be appreciated by Americans as well as American students. The sketch presents Magdalen College from across the bridge, the finest tower of this quaint and modest university town.

At St. Albans, an hour's ride from London, one may enjoy an unusual delight—a small village almost Mediaeval in its simplicity; two cross-roads, one a highway, one a secondary road; at the intersection the town hall with its clock tower; roads lined with trees widening to form an open space where marketing is done. The cottages creep up close to the cross-roads and folks with baskets move in and out of the many small shops. This is one of the many English rural communities, charming, modest and not afraid to remain small. The Abbey of St. Albans stands on the highest hill of the town. Its nave, aisles and transepts have undergone centuries of reconstruction until all periods of Gothic architecture have formed the whole, from that of the Normans to the present day. Notwithstanding these differences the effect of interior and exterior mass is harmonious. One is startled upon glancing from one side of the nave to another to see a variation from round to pointed arches: the walls of two older churches of the past now form the nave of one.

American Independence Day finds us bidding a last farewell to London. It has been the satisfying finale of two years for the most part unpleasant. Coming to England, a country our school histories had taught us to dislike, we were skeptical and eager to feel and know the real attitude of its people toward us. We found a welcome everywhere, in Ireland, Scotland and England, a pride and respect for American institutions and ideals, and most significant, a general interest in that great American, Abraham Lincoln. Commerce, greed and individual selfishness perhaps will ever rule the world's governments, and misrepresent its peoples. To us the people of England have been greatly misrepresented, at least to an extent that does injustice to them, and for the peace of the world breeds no good. A decided effort, quite general, was evident during these months to gain the good will of our country. Events in Washington at times causing extreme embarrassment to England were passed up without contest, or if of importance were discussed with frankness and a desire for justice. These feelings found expression in a most significant manner on the Fourth of July, when London celebrated with us, and as we bid adieu American and British flags were lashed together on flagstaffs and in many parts of the city waved in paralleling folds as one.

Competition for the Fullerton Union High School and Junior College

By IRVING F. MORROW, Architect

CONSIDERABLE ingenuity has been displayed by the competitors in the recent competition for the high school and junior college at Fullerton, California. Glancing over the four prize-winning plans and observing almost as many different schemes of composition, one might not be led to suspect that the problem was really one of remodeling and alteration. Yet such was the case. With athletic fields and buildings to the number of around ten in place and subject to little change save as to extension and architectural appearance, the solution might have seemed fairly well tied up. But each competitor found his own way out.

To such unattractive features as inhere in the nature of remodeling and alteration problems in general this competition added special ones of its own. For instance, the award of the prize signifies no more than the purchase by the trustees of a plan; the winning of the competition carries no guarantee of architectural employment. In the words of the program:

"The purpose of the competition is the selection of a scheme as hereinafter stated but the selection of the successful scheme does not bind the Board of Trustees to the appointment of the winner as the architect of the improvements presented or any parts thereof.

"The prize-winning schemes shall become the property of the Board of Trustees to be used by them as they see fit."

"It is the intention of the Board of Trustees to proceed with the construction of the improvements under the supervision of an architect selected by them apart from the action of this competition."

In this the board of trustees is entirely within its rights; but it is a feature not calculated to increase the attractiveness of the competition in the eyes of the architectural profession.

Nor, from the architect's point of view, were the conditions surrounding the jury any more satisfactory. Again letting the program speak for itself:

"The jury shall consist of the Board of Trustees of the school together with the principal of the school and two architects selected by the Southern California Chapter of the American Institute of Architects from among its members.

"The membership on the jury of the principal and two architects shall be advisory in character and the final decision of the jury shall be reserved to the vote of the Board of Trustees only."

In one respect, however, the conditions of the program may be considered exemplary. In lieu of a demand for eighth scale plans of all floors of all buildings, together with sections and elevations of each at the same scale drawn on Whatman paper and rendered in India ink wash, the requirement was a first and a second floor plan of the entire scheme only, at the scale of one thirty-second of an inch to the foot, drawn on tracing paper. It has always been a question why a jury must be presented with more drawings than it can properly examine, executed with greater finish than it has opportunity to appreciate, in order to judge the merits of an architectural composition. There was also required of each competitor a thesis in explanation of his scheme.

It has not been learned whether the decision of the jury was in accordance with, or contrary to, architectural advice. Neither has it been possible to ascertain the grounds upon which the award was made, as the report of the jury has not been obtainable. Indeed, if this document is in line with the tradition in such matters, it would probably be of slight utility in elucidating this point. Constituting ourselves, therefore, a jury of one

(the only kind which makes for administrative efficiency by the elimination of dissident opinion) and faithfully covering the contestants' names, we have arrived at the following conclusions:

The winning plan of Mr. Mott M. Marston is simple, practical, and accords to each department unity and compactness. In architectural articulation and adjustment it leaves much to be desired The block above School Drive possesses little composition. In the main court of the block below the shifting of the transverse garden axis from that of the architecture is a curious and unaccountable detail. Much more serious is the fact that the two blocks lying on opposite sides of School Drive are quite unrelated.

Viewed on its own merits and in the absence of any information as to the factors influencing the jury's decision, the plan of Mr. C. F. Plummer, placed second, seems inferior to the others. It is architecturally tight and closed, even congested, without offering any compensating practical advantage.

The plan of Messrs. Allison & Allison, placed third, is the best articulated of the group and is richest in opportunities for a picturesque, intimate and human development. The two halves of the scheme are united and compose across School Drive, which is not true in any real sense of either of the two designs placed before it. Its greatest defect is in the position of the Auditorium, which, from a practical as well as from a symbolical standpoint, is least well placed for community use.

In many respects the plan of Mr. Elmer Grey, placed fourth, seems the most admirable of the group. In general scheme it might be considered a variant of that of Mr. Marston, than which it appears to be no less straightforward in practical arrangement. In purely architectural articulation it is hardly inferior to the plan of Messrs. Allison & Allison; it is, indeed, broader and simpler than theirs in scale; and it is susceptible in almost equal degree of charmingly intimate handling. Thus it substantially combines the merits conspicuous severally in the other designs.

Following is the material necessary for a proper understanding of the competition; namely, the parts of the program pertaining to the problem proper, and the plan of the grounds in their present condition.

"In conducting this competition the Board of Trustees desires to put before the architectural profession a program of conditions that will bring forth the best idea, scheme and plan for the care of present needs, correction of present inadequacies, the future extension of the group on the lines of highest efficiency and the alterations and improvement of the construction and design to develop the group architecturally to the highest possible point.

"This program sets forth the minimum requirements. The competitor may use his own judgment in regard to areas, etc., noted herein.

"The property of the school consists of fifteen acres of land in the City of Fullerton, California, bounded by Pomona, Chapman and Harvard Avenues, upon which stands a group of fifteen main and about seven minor buildings.

"The present architectural and administrative centre of the school is the Study Hall building, which also contains the offices of administration. Flanking this to the left are the Commercial building, the Physics and Chemistry building and the Biology building. To the right are three recitation buildings for History and Languages, English and Mathematics. These buildings enclose, somewhat towards the south, as shown on the plot plan, a broad campus laid out with paths, shrubbery and trees. A greenhouse is located in the corner immediately west of the Biology building. This is used by the school in connection with the study of botany, etc. Bounding the north side of the Study Hall, Mathematics building and Biology building and traversing the property east and west, is a private street called School Drive. North of this drive and on the axis of the Study Hall is the Gymnasium, with the Junior College building and Polytechnic building towards the left and the Auditorium and Cafeteria building to the right. Four tennis courts occupy the space immediately to the left and west of the Gymnasium building. Beyond this and facing on Pomona Avenue are the Garage building, in which are housed the school motor omnibusses

used for transporting pupils to and from school, and a dwelling occupied by the motor repair man who is in charge of this department. Back of the Cafeteria building and towards the north are the Power House, Pump house, and Water Tank building and two dwellings occupied by employees of the school. The northern portion of the property, consisting of a tract about 380x600 feet in extent, is laid out as an athletic field and running track.

"A plot plan showing this layout accompanies the program and is an essential part thereof.

"Immediately towards the north and east are rolling hills with distant mountains beyond, while in the other direction the land is flat and well planted with trees.

"The Fullerton Union High School District is composed of the following Grammar School districts: Brea, Fullerton, La Habra, Olinda, Orangethorpe, Placentia, Richfield and Yorba Linda. Motor busses are run over established routes throughout the district, affording transportation for the pupils.

"During the year 1918-1919 there was a total enrollment of 539 students in the High School and Junior College. They were classified as follows: High School, first year, 156; second year, 132; third year, 85; fourth year, 77; special high school, 28; Junior College, first year, 37; second year, 16, special students, Junior College, 8.

"The school plant consists of a group of buildings situated upon a fifteen-acre campus. All work must be kept within the property limits indicated, except that the tennis courts may be removed and not considered in the program of this competition. The athletic field and running track is to be retained in its present location. The bleachers connected with it may be removed or amplified. The space north of the Polytechnic building shall be reserved for expansion of that building. The Junior College building and the Cafeteria building are of temporary construction and are to be demolished. The two cottages near the Pump House may be removed. The Green House may be removed to another location. All the buildings excepting the Junior College building, the Cafeteria building, and three dwellings for employees and the bleachers are practically of fireproof construction and are to be retained.

"In working out the scheme these buildings may be added to and remodelled. In the future it is the intention of the Board of Trustees to alter their external design sufficiently to bring the group into a high degree of architectural appearance.

"The Study Hall. The Study Hall, which is the center of the school's administration and activity, contains the main study hall, the library and the offices of administration. The High School study hall is to be increased to a capacity of 200, a Junior College study hall provided with a capacity of 100, a new reading room added with a capacity of 100, and a reference alcove opening from the reading room with a capacity of 15 pupils. The library, which now contains 5000 volumes is to be increased to four times its present capacity.

"The administration department shall consist of the following:

Registrar's office with counter.
Conference room.
Principal's office.
Fire proof vault, approximately 8′ x 8′.
Storage and filing room.
Lavatory and cloak room.
Dean of girls' office.
Dean of junior college office.
Girls' rest room.

"At present the aisles of the Study hall contain lockers which are to be removed to some other location.

"The Study Hall is not used for the purposes of general assembly of the school.

"The Auditorium Building. The Auditorium building contains an auditorium hall with a capacity of 950 seats for the audience and it is used for the purposes of general assembly for the school besides serving the needs of the community. The competitor is privileged to adapt this building to other uses and to provide another auditorium of equal or greater capacity on some other part of the campus.

"New Music Hall. There shall be a new building for the study of Music. This building shall contain in the first story a recital hall, with a capacity of 250, having a level floor, with elevated stage having a seating capacity of not less than 75, and two or more dressing rooms with toilets for men and women. The first story shall also contain a reception room with a floor area of 3000 square feet. The second story shall contain eight piano practice rooms, area approximately 150 square feet each, one teacher's office, area approximately 150 square feet, and two class rooms, capacity 40 pupils each.

"Biology Building. This building shall be amplified by the addition of a new lecture room with a capacity of 40 pupils and a new Botanical Laboratory with a capacity of 30 pupils.

"Physics and Chemistry Building. Present building to be used for the study of Physics only for the High School and Junior College.

"New Chemistry Building. Two laboratories, capacity 30 pupils each, one lecture room, capacity 40 pupils, one instructor's laboratory, two storerooms, each having 300 square feet floor space, one recitation room, capacity 50 pupils, one balance room, 200 square feet. New Chemistry building may be attached to the building to be used for the Physics Department.

"Commercial Building. The present typewriting room is to be used as a recitation room. Additional rooms needed:

One typewriting room with a capacity of 50 pupils.

One model office for model office equipment, 500 square feet space.

One storeroom, 150 square feet floor space.

"Mathematics Building, English Building, History and Languages Building. These buildings are to remain as they are, provided, however, that class rooms may be added and architectural remodelling may be indicated on the plan to bring them into conformity with the rest of the group.

"Polytechnic Building. This is a new building, recently completed and is used for the work both of the High School and Junior College. This building is to remain as it is, but architectural remodelling may be indicated on the plan to bring it into conformity with the rest of the group. Space extending north of this building one hundred feet is to be reserved for additions to it.

"Gymnasium. The present gymnasium room shall be doubled in size and so arranged that it can be used as a whole or divided for the use of two classes at the same time. Ample visitors' galleries must be provided. The directors' rooms may be changed in location or size. The toilet facilities for boys and girls are to be doubled in capacity.

"Girls' Dressing Rooms. This space shall be remodelled and increased to have the following capacity: Showers, 30; dressing rooms, 60; lockers, 400 These are to be so arranged that one shower will serve two dressing rooms.

"Boys' Dressing Rooms. This space shall be remodelled and increased to have the following capacity: Showers, 20; lockers, 400; adequate space for dressing.

"New Rooms. Two visiting teams' rooms, attached to each a wash room containing a lavatory and toilet. Present visiting teams' rooms are to be used as store and cloak rooms.

"New Domestic Science, Art and Cafeteria Building.

"Requirements:

"Cafeteria (in basement)—

1. Main lunch room with a capacity of 500.
2. Serving tables for four lines.
3. Kitchen.
4. Store rooms.
5. Cold storage and ice machine.

"Domestic Science and Art (first floor)—

"For the Cooking department there shall be two laboratories with a capacity of thirty pupils each, pantries and store rooms.

"New Dressmaking department shall have two sewing rooms with an area of approximately 25x30 feet each, two fitting rooms approximately 12x15 feet and a teachers' office.

The Millinery department shall have a millinery room with a floor area of 350 square feet.

"There shall be, also, a recitation room with a capacity of 40 pupils.

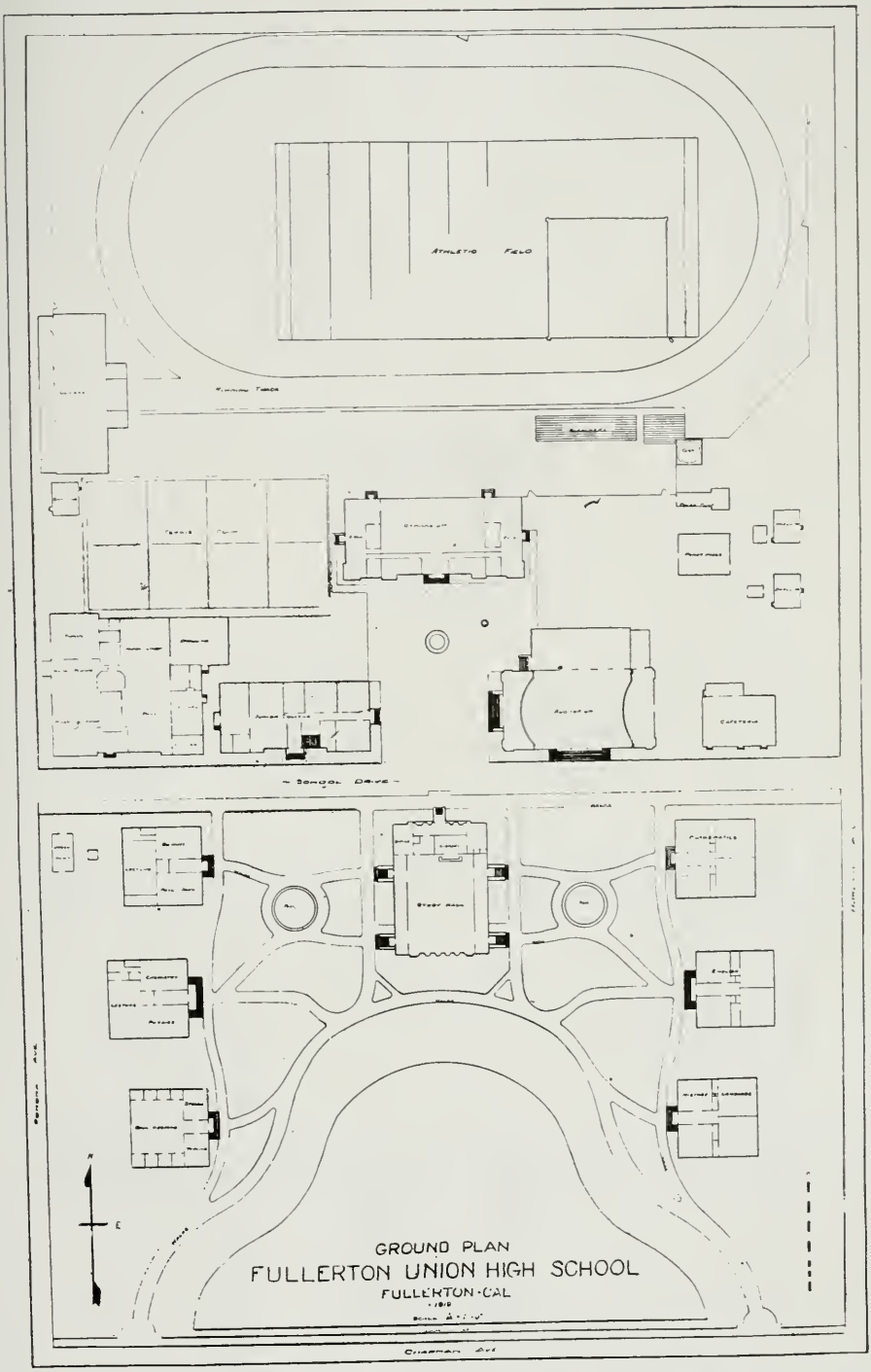
"Fine Art Department (second floor)—

"This department shall contain two drawing rooms, each with a floor area of 600 square feet and two applied art rooms, area 400 square feet each. These rooms are to be fitted with adequate lockers for 25 pupils each.

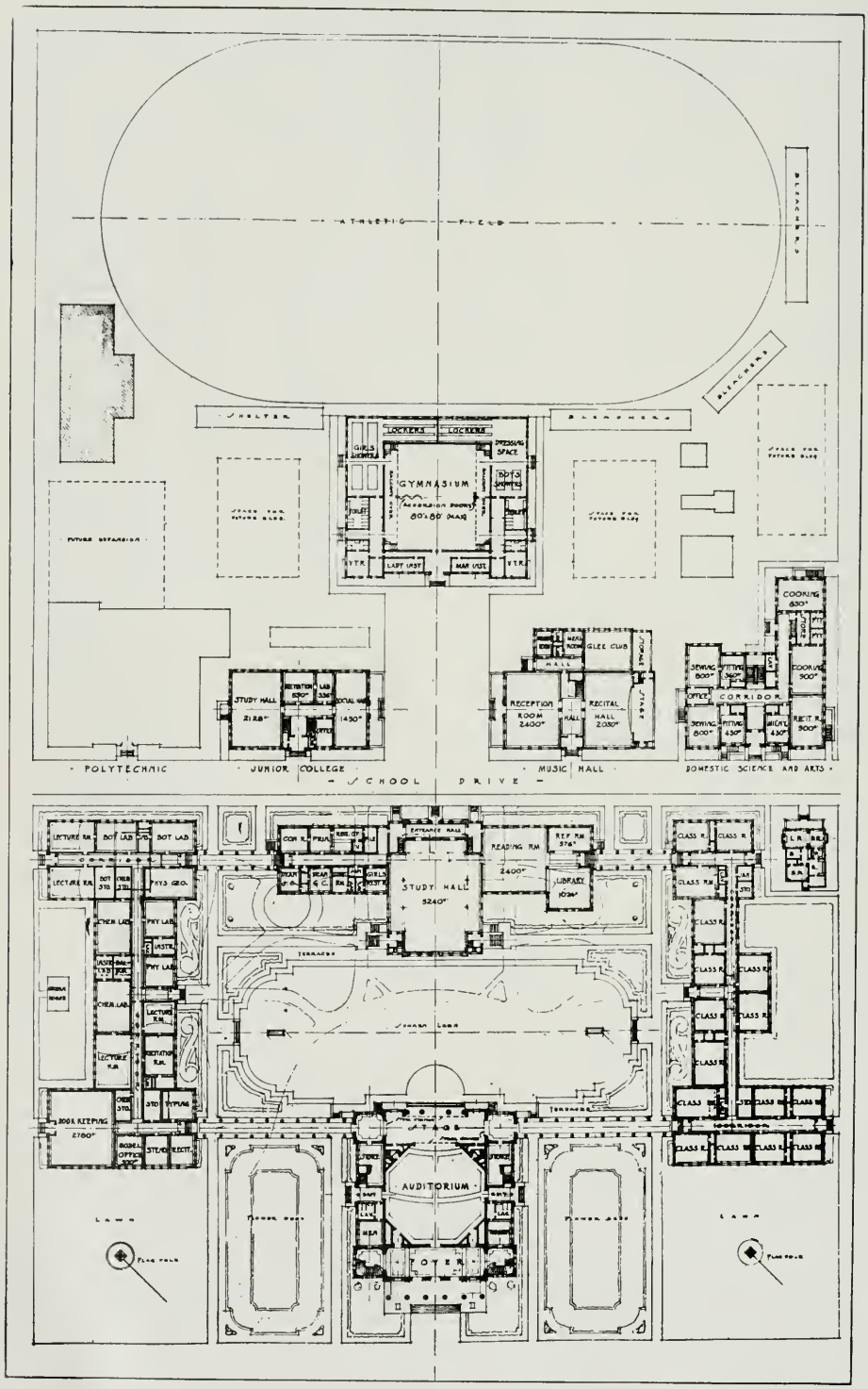
"There shall also be a cloak room, a large store room and a teachers' office.

"There shall also be an Exhibition room, lighted from the ceiling and at least 30x30 feet in size.

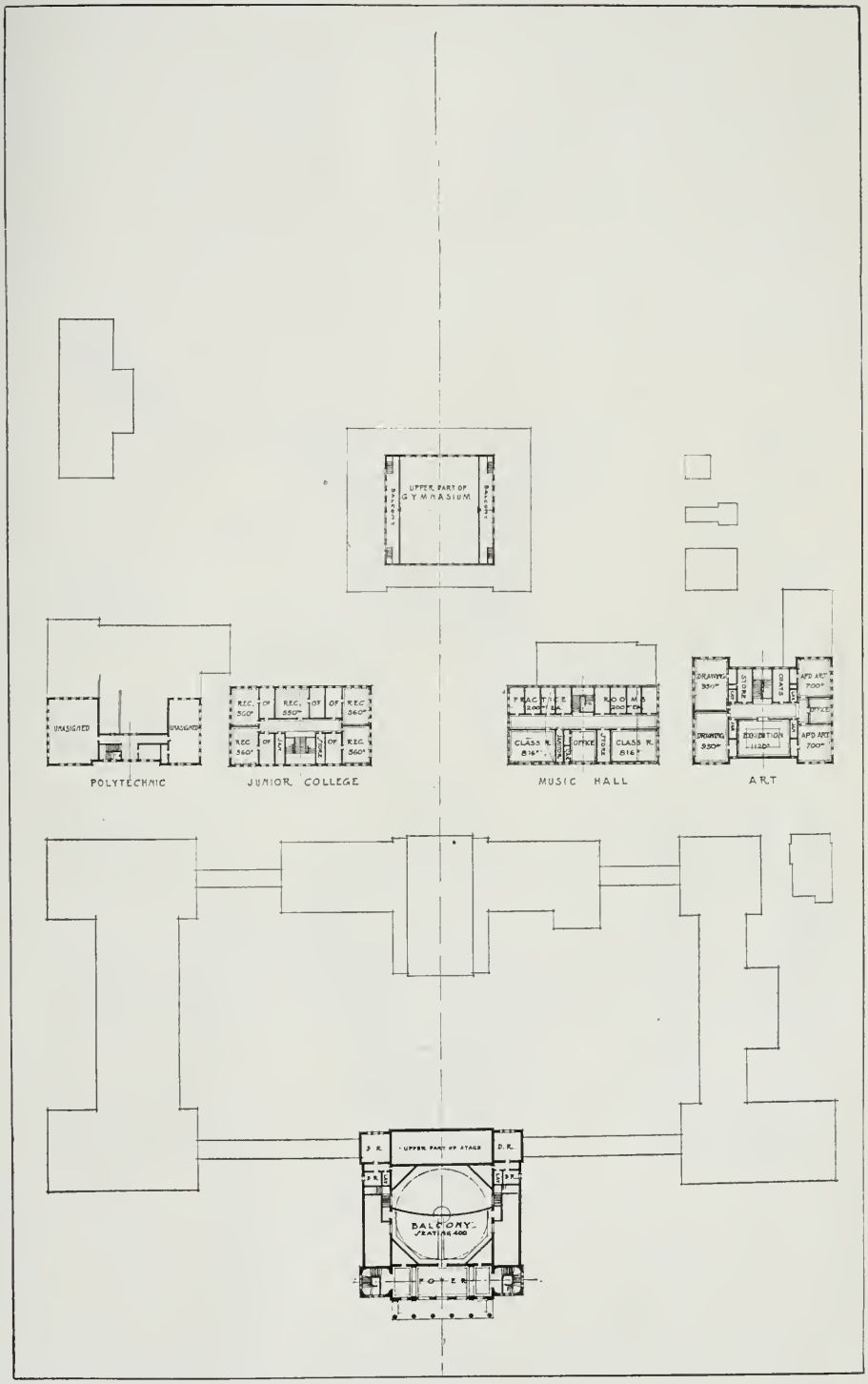
"Model Dwelling House. The model dwelling house, for the use and study of the pupils in Domestic Science, shall consist of a completely equipped house containing a living room, dining room, pass pantry, kitchen, screen porch with laundry facilities, bedroom and bath. The house shall be heated by gas and be equipped with an automatic gas hot water heater and other mechanical equipment usually found in a house of moderate cost. The location of the house is left up to the choice of the competitor but it is deemed desirable that it be in close proximity to the department of Domestic Science."



FULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE PRESENT PLAN OF GROUNDS



COMPETITION FOR FULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE FIRST FLOOR PLAN, PLACED FIRST MOTT E. MARSTON, ARCHITECT



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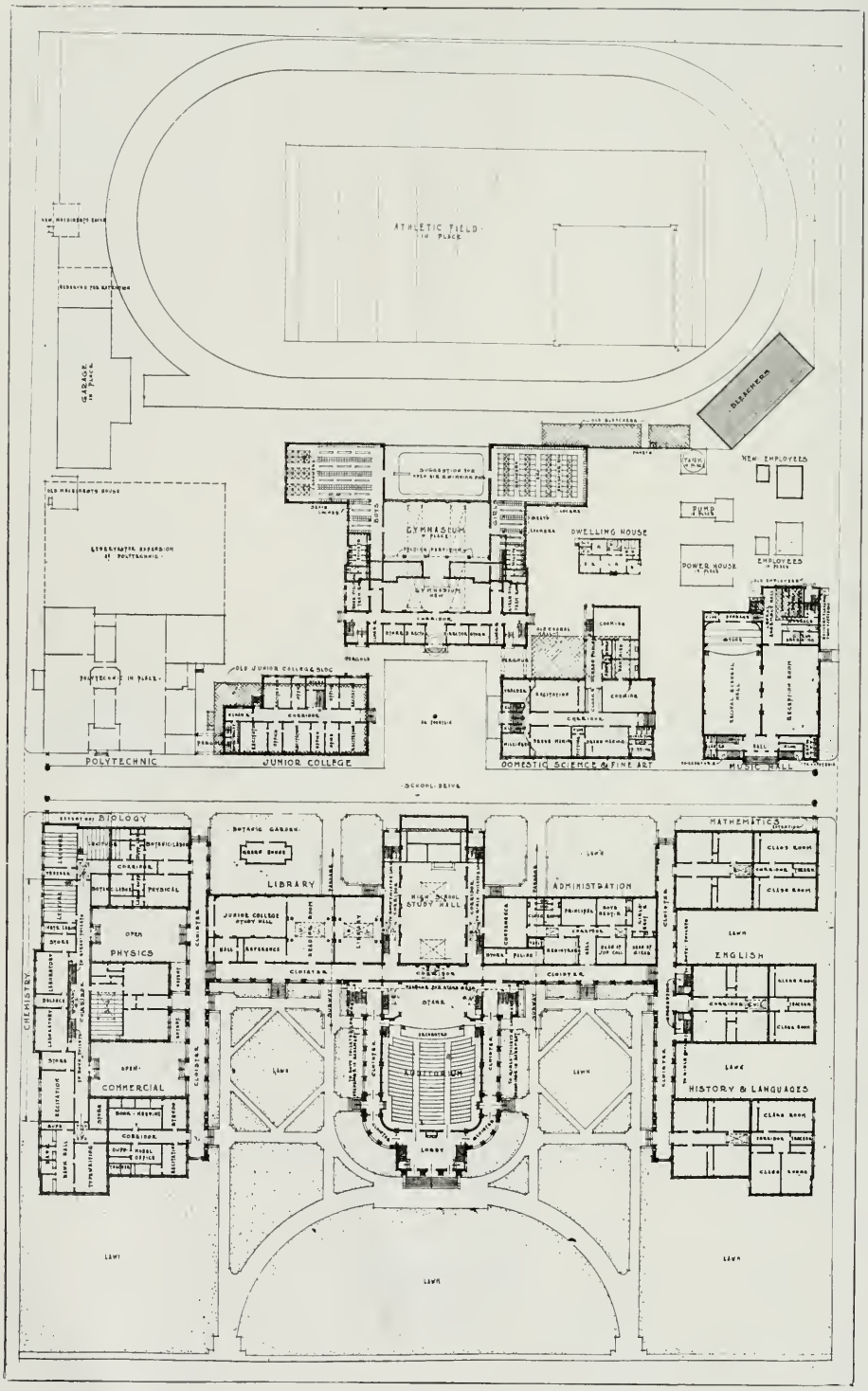
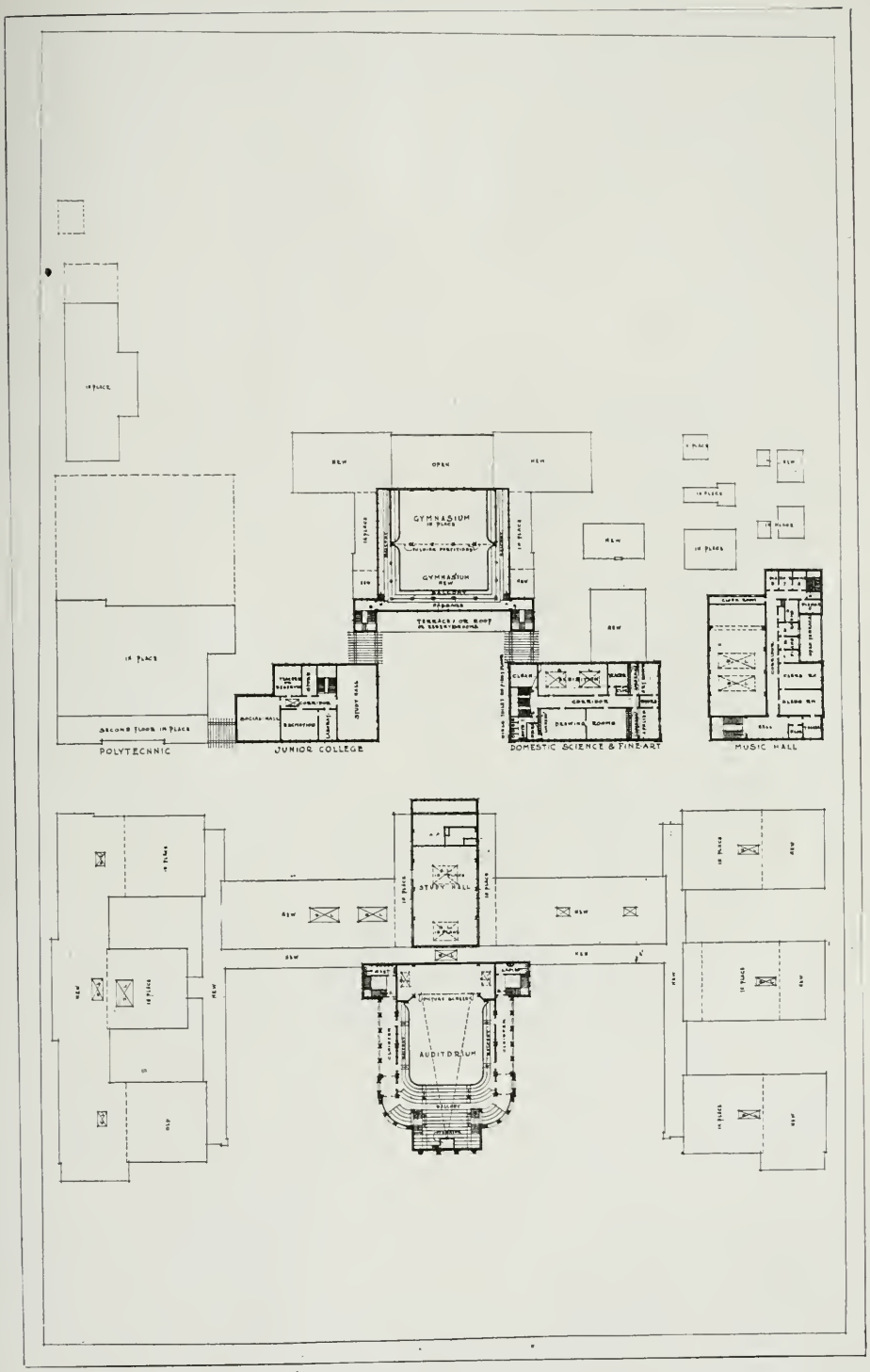


COMPETITION FOR FULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE FIRST FLOOR PLAN, PLACED SECOND
C. F. PLUMMER, ARCHITECT



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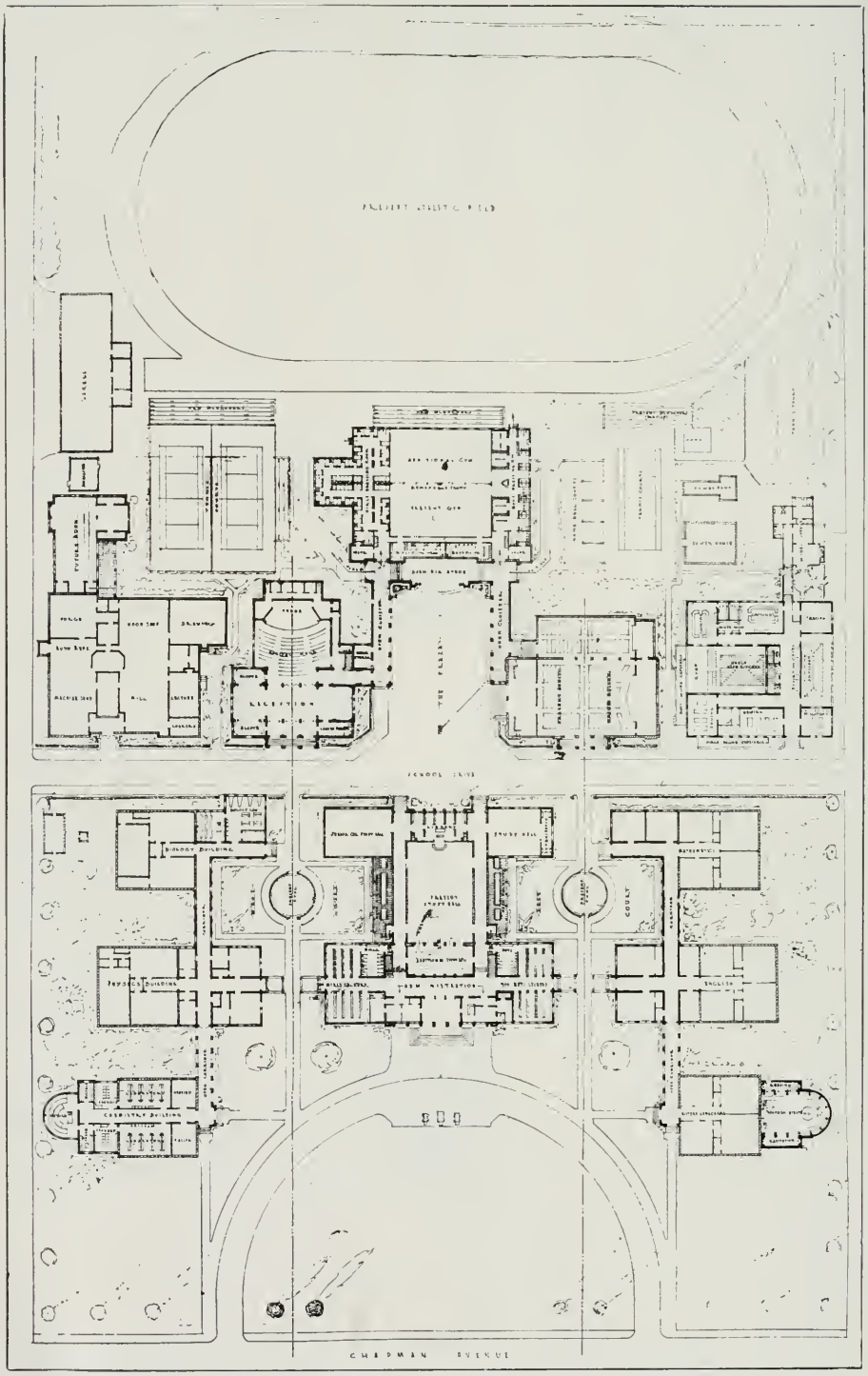
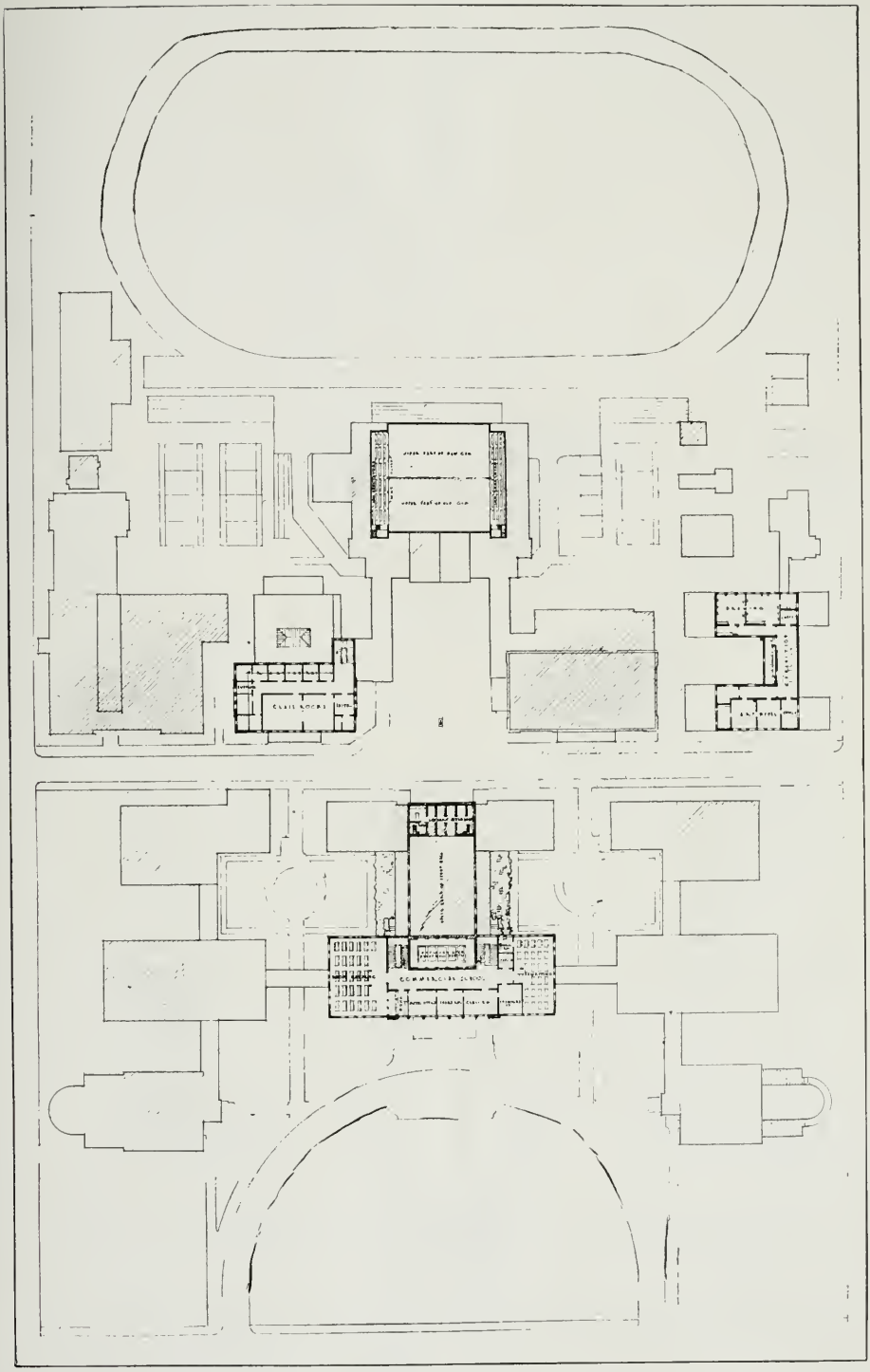
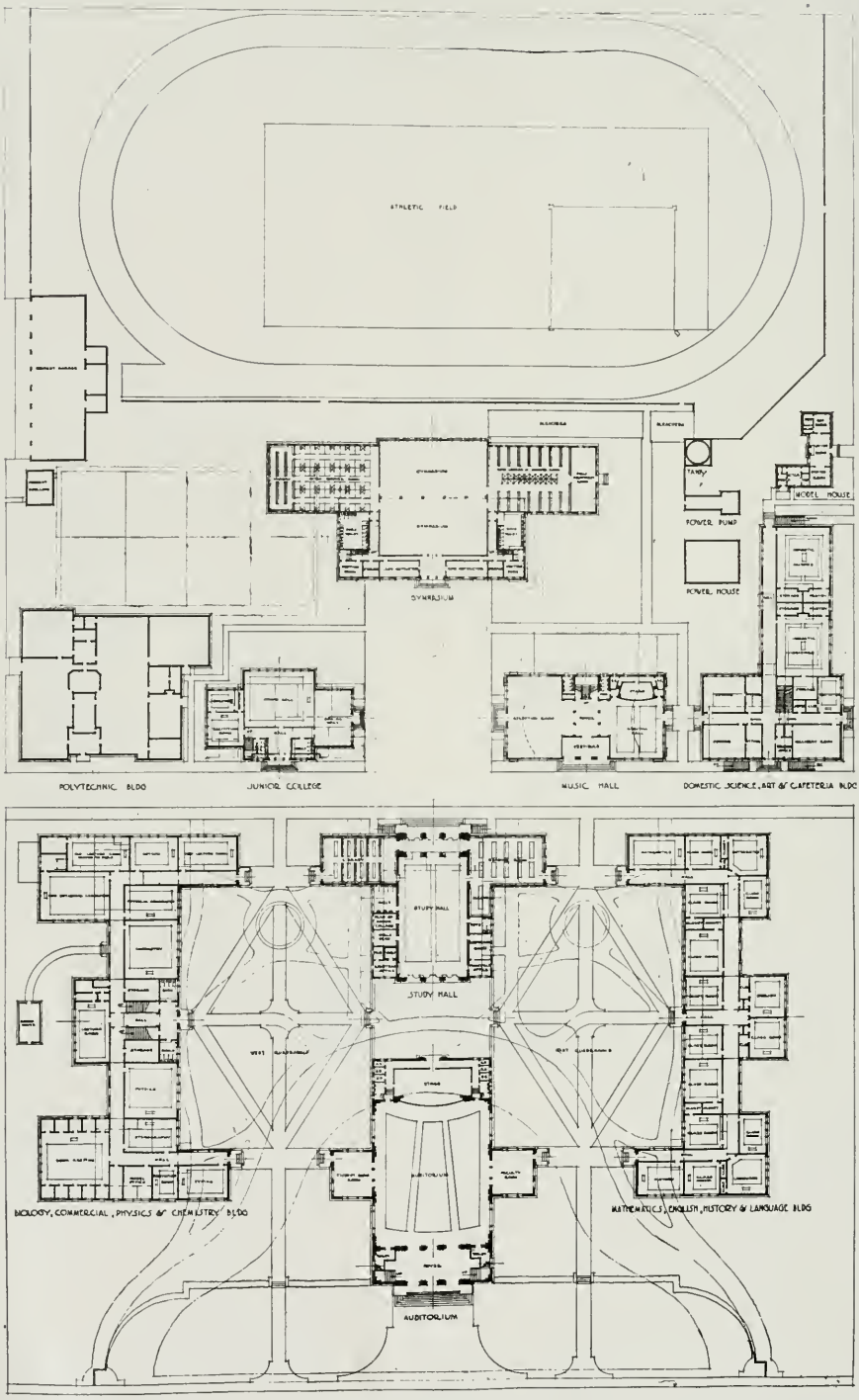


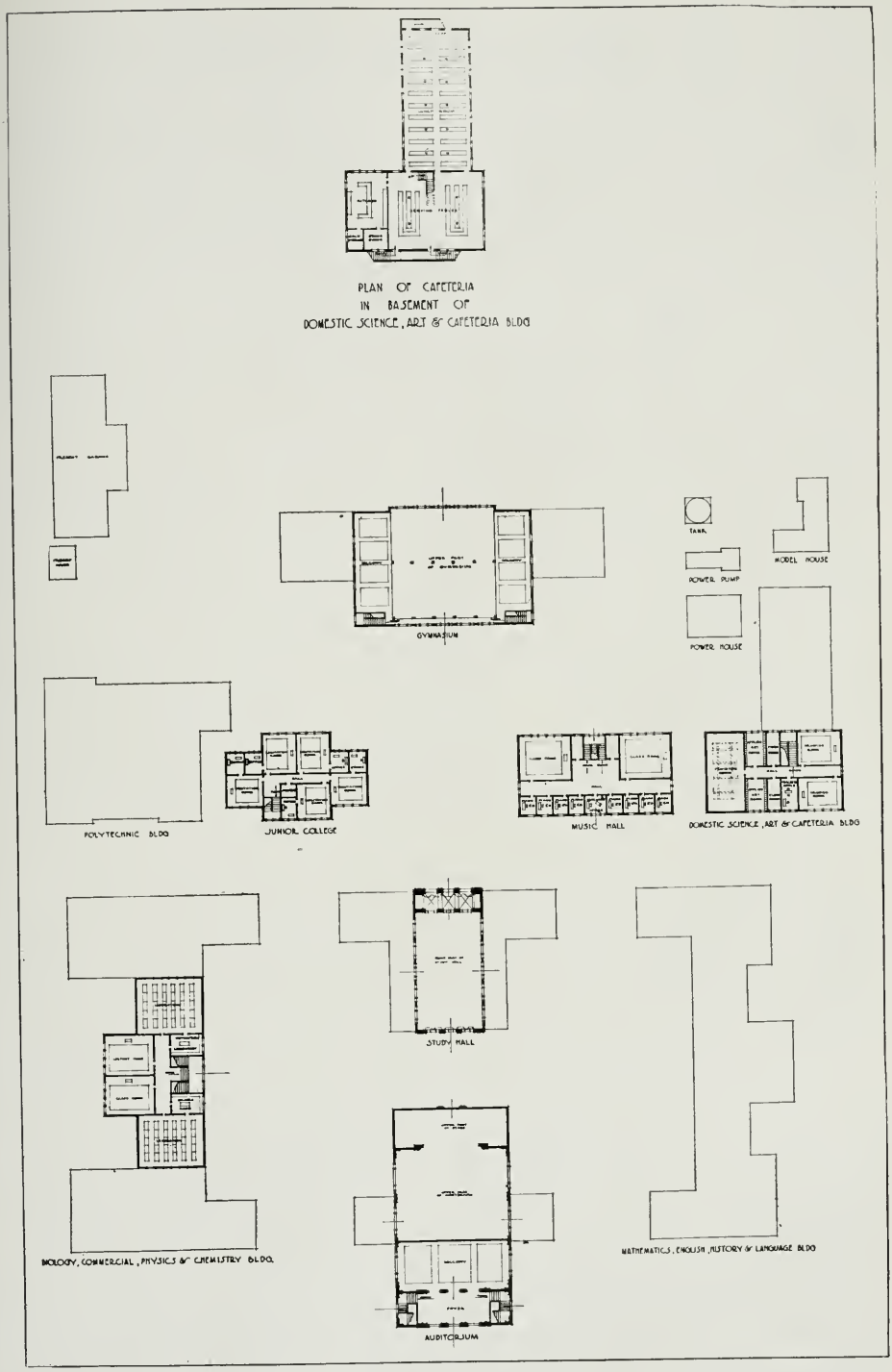
COMPETITION FOR FULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE
FIRST FLOOR PLAN, PLACED THIRD
ALLISON & ALLISON, ARCHITECTS



COMPETITION FOR BULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE SECOND FLOOR PLAN, PLACED THIRD ALLISON & ALLISON, ARCHITECTS



COMPETITION FOR FULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE
FIRST FLOOR PLAN, PLACED FOURTH
ELMER GREY, ARCHITECT



COMPETITION FOR FULLERTON UNION HIGH SCHOOL AND JUNIOR COLLEGE
SECOND FLOOR PLAN, PLACED FOURTH
ELMER GREY, ARCHITECT

Profits in Proper Painting

By DIXY WELLS, in Building Management

WINTER is coming on—with shorter days—bringing increased lighting bills, but a great deal can be saved, and, therefore, net profits increased if the building manager or those in charge of decorating, thoroughly understand the light-saving ability of proper painting.

In considering this, you must recognize one outstanding fact—that the eye distinguishes through visual sensation, and has set certain requirements. Outside of these requirements, conditions become abnormal, for the eye is not adapted to them.

A candle light in a dark room is irritating and blinding, while an incandescent lamp in a white room is bearable. From this can be seen that efficient lighting depends upon the distribution, light-reflecting value, and in the quantity of light, and that conditions which provide this will not only fail to tax the eye, but will lessen lighting bills.

To correctly light daylight interiors, all natural light which enters must be deflected so that an even distribution to all eyes occurs; that is, without strong brightness, contrasts, glare or lines of demarcation showing.

Now, this can be accomplished through painting, and it can be reached through the proper placing of skylights, the use of diffuselite blinds, the greatest good being accomplished by a device or method installed in the window of skylight openings which will exercise light control.

All interior surfaces, such as ceilings, sidewalls, etc., must be so painted as to present proper reflecting surfaces in order that after treatment, the combined result from skylights, blinds, windows, etc., and the finished area will create a condition that in every respect meets the normal requirements of the eye, and when the eye is saved, profits to the building managers are also included. In other words, the direct rays of the sun, strong contrasts, glare and all direct reflection must be eliminated, and the difference between the lightest and darkest parts of the room brought as near as possible to a minimum.

There are certain paints which are scientifically prepared and developed to a point where they meet just these conditions, paints which have the maximum reflecting surface so as to obtain the passing of a maximum amount of light. The question of light, you will see, does not stop at the window—the ceilings and side-walls can be made sources of light receiving and light giving; they are of great importance and should be taken at their full value.

To get the best results in the average room it is well to paint the ceiling white, as approximately 60 per cent of light comes from that surface. Paint the walls then a light, natural tint, sufficiently warm to neutralize this strong light from the ceiling, and such painting, when properly done, must be based on fixed laws. We believe that all paints thus used should be a flat finish in order to avoid specular or direct reflection. These finishes should be permanent, showing but a slight departure in their initial reflection. The finish should be a durable, sanitary one that can be scrubbed or washed repeatedly with soap and water so as to appear with each cleaning as a new coat.

For the base of this material, it is possible to obtain pigments which show high initial coefficients or reflection and marked permanency, but to reach these it is necessary that great care be taken in the mixing as only certain colored pigments may be used in order that the finished product shows non-absorption, as well as high reflecting power.

A light daylight green is a good color for sidewalls, and with a white

ceiling most closely approaches in atmosphere a natural exterior condition similar to that found in the shadows of green foliage on bright days. We really cannot improve upon nature, and its colors exercise such an important influence among humans that all decorators should give it more careful study. Light tans, light blues, also tend to increase your light.

It is not necessary to explain light diffusion from a technical viewpoint; it is sufficient to know that light diffusion exists and can be brought about by reflecting direct light to painted reflecting surfaces which, in turn, deflect in a spread-out manner.

It is evident that walls, ceilings, fixtures and all other areas visible to the eye present only surfaces that provide diffused reflecting, and that the source of light, either natural or artificial, should be concealed from direct vision and diverted to these diffused reflecting surfaces, by means of fixtures or attachments that do not, in exercising their functions, sacrifice light quality or light quantity.

You will see, therefore, that the selection and placing of your lighting fixtures is very important. Painting and lighting go hand in hand to save money for the building manager, and in choosing your finishes, no matter what color, they must be composed of non-absorbing pigments, which, when dried out upon the walls, will present an opaque surface that will not absorb, retain particles of dust or show chemical reaction.

Some pigments called inert are subject to change when in solution, and you must guard against these pigments, and when we say pigments we mean those that are employed to give color to the finish. They must be used to furnish density and non-absorbing power, and until they are insisted upon, we will always have walls that fade, accumulate dust and absorb, rather than reflect, light.

Modern demands for efficiency and economy in production in manufacturing processes, as well as housing propositions, have caused new interest in the subject of painting, in order that more and better lighting conditions may be produced, and, therefore, profits accrue. Sanitary conditions are also demanded, and all these can be produced through proper painting.

There is only one way to properly "daylight" a room and that is to use a finish that will throw out, rather than absorb, all the light that strikes it, and send this out as evenly as possible. In this way, we might say, that all light is reclaimed and used, and not blocked, as would be the case when inappropriate finishes or shades are employed. If light from the window, for instance, is thrown to the ceiling, that ceiling should be so finished as to return this light in maximum-reflecting power, and dead, flat, light colors will best accomplish this.

* * *

Designing Many Buildings

Mr. S. Heiman, architect in the Mechanics Institute building, San Francisco, has recently completed plans for new buildings aggregating in value over $200,000. The work includes extensive alterations to the old municipal car barn at First avenue and Geary street which is to be modernized into stores and offices, two-story class "C" loft building on Sutter street, east of Mason, for Mr. W. S. Dunn; two-story brick veneer undertaking establishment on Buchanan street for Chevra Kadisha and a five-story warehouse for Lachman Bros., at Sixteenth and Capp streets, San Francisco.

Some of Mr. Heiman's more important work will be illustrated shortly in this magazine.

GARDEN VIEW, HOUSE OF MR. M. A. HARRIS, ATHERTON
Ward & Blohme, Architects

GARDEN VIEW, HOUSE OF MR. M. A. HARRIS
From a water color by Percy Gray, Del.

STAIRCASE HALL, HOUSE OF MR. M. A. HARRIS, ATHERTON
Ward & Blohme, Architects

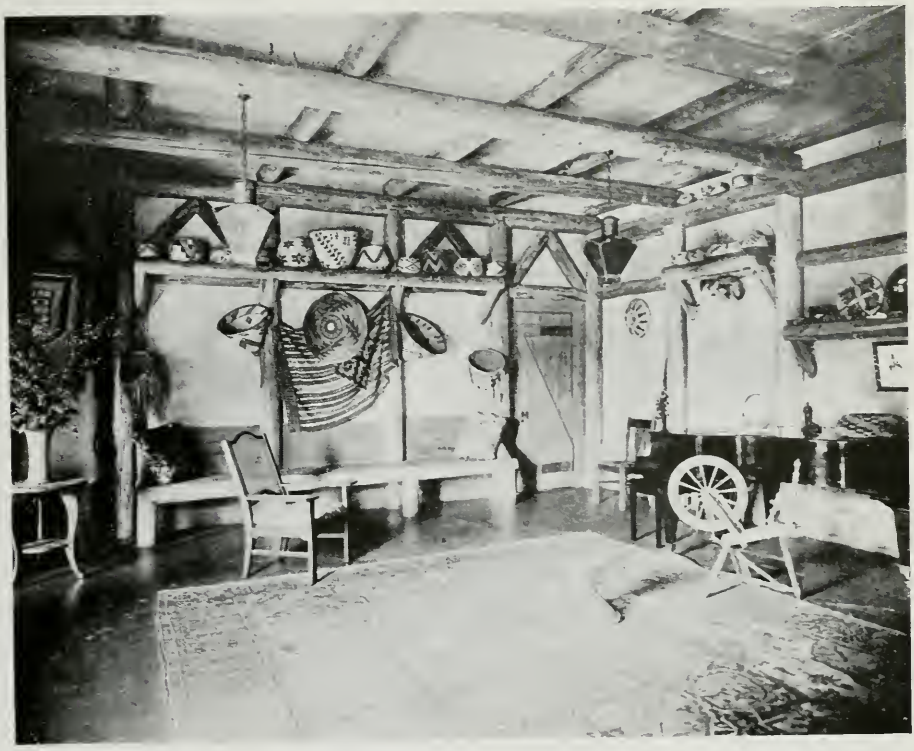
Making Over a Country Home

By CLARENCE R. WARD, A. I. A.

THE making of an old house into a new one is a problem which in most cases is to be approached by the architect with more or less trepidation. This for the reason that most old houses in California were built either from no plan at all or a very poor one. One has only to look back over the Queen Anne and Mid-Victorian periods to appreciate this. However, in the case of the M. A. Harris home in Selby Lane, Atherton, California, the rather helter-skelter plan of the original Eaton house proved more beneficial to the final result than disastrous. Best of all, the architects found a fine old

DINING ROOM FROM RECEPTION HALL, HOUSE OF MR. M. A. HARRIS
Ward & Blohme, Architects

LIVING ROOM WITH ORGAN CONSOLE, HOUSE OF MR. M. A. HARRIS
Ward & Blohme, Architects



TWO VIEWS OF INDIAN ROOM, HOUSE OF MR. M. A. HARRIS
Ward & Blohme, Architects

garden surrounding the house which suggested the type of architecture. The English, perhaps, better understand the art of making their homes appear as a part of the surroundings than any other people. A trip through an English countryside, or estate, is proof positive of this and most inspiring to the traveler.

The stone for the Harris house was quarried in the neighborhood and is exceptionally fine in color. The roof shingles are specially made and are of extra thickness. The color scheme is a soft grayish brown for the woodwork with a gray buff rough cast plaster on the walls.

The Indian room was formerly a ball-room semi-detached from the house and had yellow pine trim, cove ceiling, glazed tile mantel and "art" glass. The design of the room was suggested by the fact that the owners possessed a rare and handsome collection of Indian baskets and blankets. The logs were taken from a salt water pond where they had lain for years and are of a warm natural grey tone. The woodwork is sandblasted. The lanterns were formerly in the old palatial Stanford stables at Palo Alto and have many interesting names and dates scratched upon them. This room may be said to have become almost the center of the home life of the occupants.

Messrs. Ward and Blohme designed and superintended the carrying out of the changes.

* * *

The Greenhouse

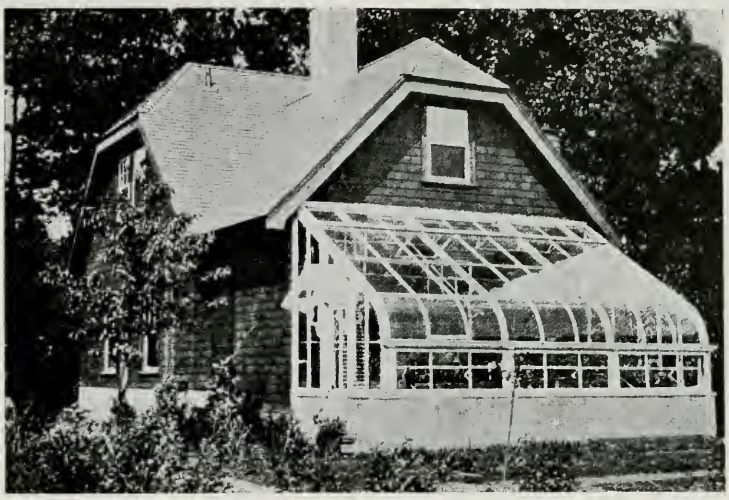
RUSKIN'S statement so many years ago of the things that lead to human happiness is as true today as then. To watch the seeds burst to greenery and the buds change to blossoms is a normal pleasure of the race. To most of us this delight is confined to about half of the year, for there seem to be very few who realize that a conservatory is within their reach.

As a matter of fact there are hundreds of thousands of Americans who are abundantly able to maintain conservatories who do not have them. Generally this is due to a mistaken idea of the cost of construction and maintenance. When a house is built a small glass-enclosed room can be included with surprisingly little additional expense, and the heat needed to keep it warm will hardly be appreciable as a part of the heating cost of a house of good size, even though it should require a small separate heating plant.

The possibilities of a successful conservatory are now much greater than they were even a quarter of a century ago. The specialists in greenhouse construction have solved the problem of getting the most sunlight possible under any given condition and have eliminated many of the causes of failure. The curved-eave construction has been one of the greatest helps in this direction.

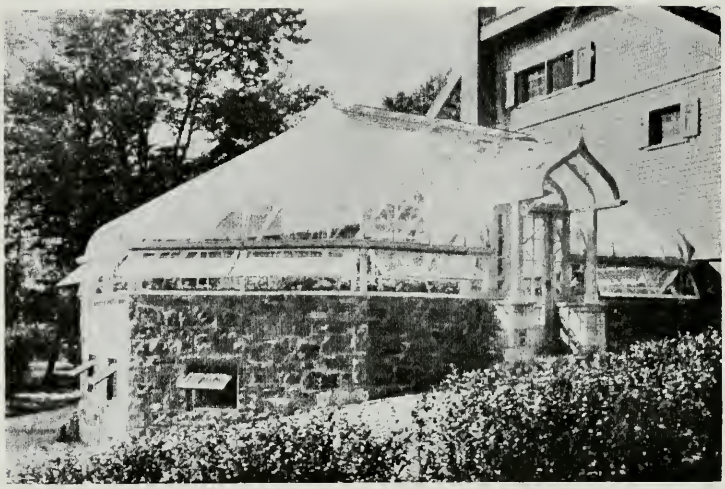
In planning for a conservatory as a part of the home the first consideration should be the exposure to sunshine, for all the future results are directly dependent upon the relation of leaf-green to sunlight. The more sunshine the more plant-growth, and in the cloudy days of winter every golden gleam must be conserved. A southern exposure is, therefore, very desirable, as is also a situation in which the shadows of trees or buildings will not interfere with the visits of Old Sol to your colony of growing plants.

In general the best place for the glass-enclosed room is at the end or the side of the house with a southerly exposure, says Mr. C. W. Moores in House Beautiful. It should open off from the living-room or dining-room, where it may be used as a part of the house by all members of the family. The suggestion of perpetual spring that the living plants give is the most valuable



Mr. Donald M. Hill's conservatory at Waban, Mass. The curved-eave construction helps to solve the problem of getting the most sunlight possible under any given condition, as well as being more pleasing in effect than the old types.

An excellent type of modern conservatory construction. The most noticeable features are the curved glass connecting the roof and sides, and the high eaves.



Col. C. N. Wallace's conservatory at Beverly Cove, Mass., which had to be built on a slope. This view shows how the conservatory may be opened up when it is desired to give the plants a change of air or to cool off the room. This is an important item in successful gardening.

Showing how a conservatory may be adapted to this type of stucco house. Harold Hill Blossom designed the tiled fountain in this greenhouse in Brookline, Mass., which adds the final charm to the room.

feature of the conservatory, and the wise householder will make the most of the opportunity.

The accompanying pictures show some excellent types of modern conservatory construction. As compared with older types the most noticeable features are the curved glass connecting the roof and sides, and the high eaves. The curved glass gives a more pleasing effect and admits more sunshine than formerly, and the higher eave line gives room for taller plants on the side benches. Both also give greater space inside, with a feeling of more freedom to the occupant.

Of course, the uses to which a greenhouse may be put are almost as varied as the ways in which you may use an outdoor garden. It may be simply another living-room with palms and potted plants to give the feeling of perpetual summer. Or it may be a nursery for the plants used for decoration all over the house, serving to bring them back to health and vigor after they have been kept in less sunny rooms.

To the practical gardener a little greenhouse is of great value as an adjunct to the outdoor garden. Here one may start all the plants for the outdoor garden—cabbage, celery, lettuce, tomatoes, peppers, onions, cucumbers, melons and various others.

The pleasure to be derived from the outdoor flower garden may be greatly increased by getting an early start indoors, especially of the seedlings of those tender flowers that blossom late and require an early start in order to insure a long period of blooming. The mere sowing of the seeds and watching the young plants develop is to the real gardener a pleasure in itself, and when it also increases greatly the satisfaction to be derived from the garden later in the season it becomes well worth the doing. A bench in the home greenhouse is an ideal place for starting these seedlings.

It is necessary, of course, even before this start indoors is made, that one should decide what flowers are to be grown in the outdoor garden. There is really such an embarrassment of riches offered to everyone who desires to have a flower garden that intelligent selection is always necessary. It is a common saying that one should grow the flowers one likes the best, and in general this is true, but one should also always have under way some new line of investigation or experiment which shall add the zest of new experience to one's gardening. In growing the old things always try some of the newer varieties, and select each season some new flower not before grown and grow named varieties of that. In this way, the flower garden will always possess an absorbing interest, and one's knowledge and experience will have constant additions of inestimable value.

* * *

Brick Veneer House Proves Good Investment

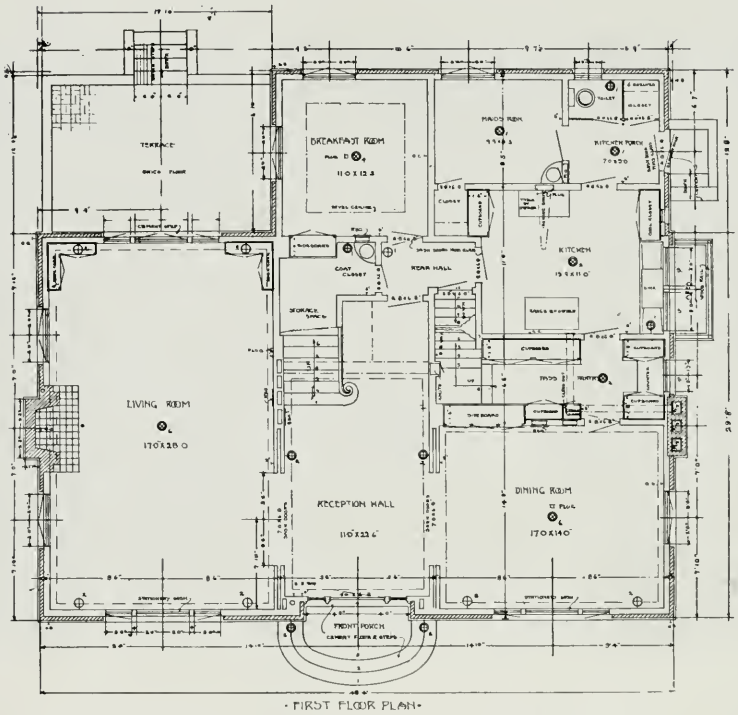
That it pays to build a home of substantial materials was exemplified recently in the sale of a two-story brick veneer house on Claremont avenue, Berkeley, owned by Mr. E. B. Davis. The house was designed by Mr. Sidney B. mate cost of $7,500. It has ten rooms, sleeping porch, sun room, two baths, a separate garage, attractive garden, and the living room is finished in mahogany while the other rooms are done in pine and white enamel with hardwood floors throughout. There is tile in the bath rooms. The architect says much care was taken in the use and selection of materials. There is no waste space in the house. The new owner evidently realized the same house could not be duplicated today for twice the original cost for he paid $16,500 for it. Photographs and plans of this house are shown on succeeding pages.

HOUSE OF MR. E. B. DAVIS, BERKELEY
Sidney B. Newsom, Architect

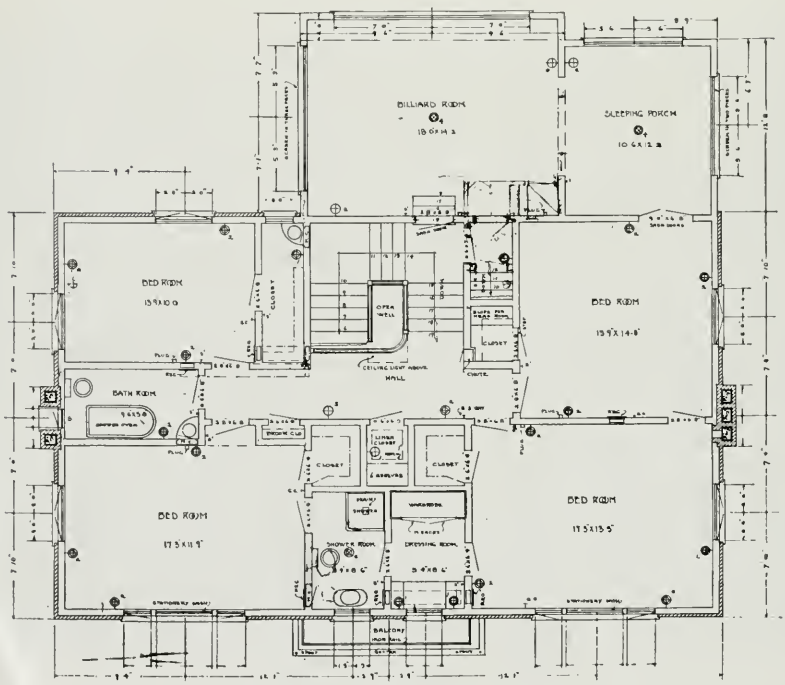
DINING-ROOM, HOUSE OF MR. E. B. DAVIS, BERKELEY
Sidney B. Newsom, Architect

STAIR-HALL, HOUSE OF MR. E. B. DAVIS, BERKELEY
Sidney B. Newsom, Architect

LIVING ROOM, HOUSE OF MR. E. B. DAVIS, BERKELEY
Sidney B. Newsom, Architect



FIRST FLOOR PLAN, HOUSE OF MR. E. B. DAVIS, BERKELEY



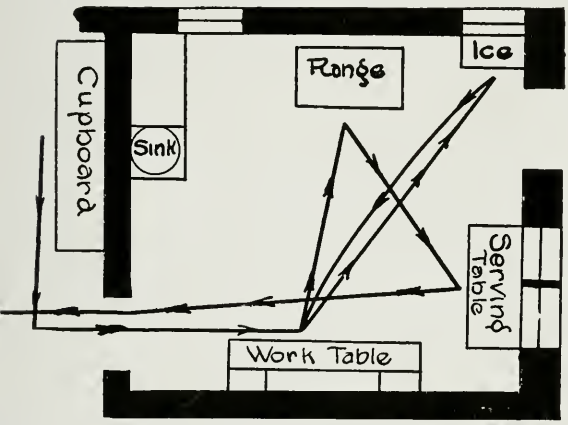
SECOND FLOOR PLAN, HOUSE OF MR. E. B. DAVIS, BERKELEY
Sidney B. Newsom, Architect

Reducing Kitchen Mileage to a Minimum*

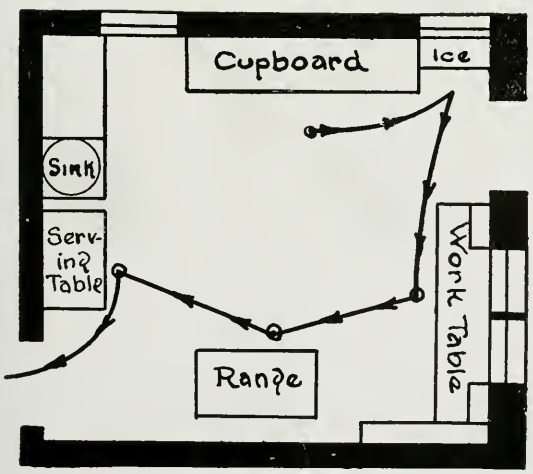
By JOSEPH FOSTER, in House Beautiful

THE average American housewife walks about five hundred to eight hundred miles each year in her own kitchen, preparing the meals for her own family.

What mere man can boast that he walks half that distance to and from his office? We are talking about an average woman who spends very little time in the scientific arrangement of her kitchen equipment. If the ice-box fits well and looks nice in this corner, it is generally kept in this place. The range is put in another corner because it is the first place that one thought of putting it. Little thought is given to the relation of the ice-box to the range, or to their relation to the other articles of the kitchen furniture. However, one ice-box misplaced means perhaps an additional walk of fifty miles each year. One range misplaced never means less than seventy-five miles a year extra. It is this confused grouping of the kitchen furniture that adds literally hundreds of miles each year to the distance walked by the person cooking the meals.



The inefficient kitchen—The housewife who cooks in this kitchen walks seven hundred miles each year preparing her meals.



The efficient kitchen—This housewife walks only three hundred and fifty miles each year in the same kitchen.

A typical inefficient kitchen is shown in the first drawing. The woman who cooks in this kitchen walks about two miles a day getting meals for a family of four. Think of it! Two miles a day. That means more than seven hundred miles a year. The greater part of the way from Chicago to New York.

By the scientific arrangement of this kitchen the mileage may be cut almost in half. There is one simple rule in scientific kitchen arrangement. Always group your kitchen furniture in the following order and you will have no trouble: First, the cupboard; second, the ice-box; third, the work table; fourth, the stove, and fifth, the serving table. The serving table must be near the door leading to the dining-room. Take this as your starting point and work backward.

This is the logical arrangement, is it not? With this order of grouping you rarely recross your steps. As soon as you are finished at the work table, you go to the stove, immediately to your right. How much easier is this than to run all the way across the room to the stove on the opposite wall as shown in the

*The figures used in this article were obtained from extensive investigation on the part of the Home Economics Department of the University of Wisconsin.

plan of the inefficient kitchen. Likewise you must have the serving table next the stove, for you serve as soon as your food is cooked. And as I said before, you must have your serving table near the dining-room door. Note how complicated the cook's path is from the stove to the serving table to the dining-room in the drawing of the inefficient kitchen. The path indicated in the drawings is but for one dish. Remember that you prepare dozens of dishes each meal, and then you will realize how the efficient kitchen cuts your mileage in two.

It would be difficult and wearisome to follow one working in the inefficient kitchen throughout the entire preparation of the meal, but let us follow in her footsteps when she is almost ready to serve it. Naturally, the first start would be at the cupboard to get the dishes to be used. These would be taken to the work table. Then there would be things in the ice-box to be brought back to the work table. The next move would be to the range for those vegetables and so forth which had been cooked. These would be brought to the serving-table and finally to the dining-room. This route, it is understood, is worked out on the theory that the woman tries to save steps and plans her work.

The whole secret of the kitchen-efficient is the placement of those articles of equipment near each other which are connecting links in the process of getting a meal. Practically all utensils other than serving-dishes should be within direct reach of the cook as she sits at the work table. The best way to treat utensils is to classify each according to its use. Those utensils needed at the stove for cooking should be hung on a rack behind the stove. Also the utensils should be hung as near to the working surfaces as possible. This eliminates a great deal of carrying from one place to another.

The cupboard with its dishes must be kept in the kitchen whenever possible. A cupboard in the dining-room may be a pretty way of displaying one's dishes, but it means about one hundred miles difference in mileage to you each year. Witness the misfortune of the housewife in the inefficient kitchen. She must carry all of her dishes twice as far as the one in the second drawing. Not only must she get them from the dining-room, but they must be returned to the dining-room after being washed and dried. One hundred miles a year according to experts in scientific kitchen methods is the difference in mileage of the two women.

It is entirely possible, of course, if building, to plan the cupboard in such a way that there is access to it from the kitchen as well as from the dining-room, thus having the advantage of the dishes being shown in the dining-room and at the same time convenient to the kitchen.

One will, of course, have to admit that some kitchens will be very hard to rearrange in an efficient manner as I have just described. Some stoves have the bad quality of fitting in only one particular spot in your kitchen. And then there is the question of the chimney. The chimney cannot well be moved. There is only one thing to do in such cases. Begin with the stove, and arrange the other articles in proper relation to it. The position of the water-pipes and drain-pipes can be changed if it is necessary. It is easy, after all. The same applies to a misfitting work table or a cumbersome ice-box.

* * *

The Building Material Situation

One of New Orleans' prominent architects tells this story, which he says is not original except as he applies it to the building material situation: "When water becomes ice," asked the teacher, "what is the great change that takes place?" "The greatest change, ma'am," said the little boy, "is the change in price."—Building Review.

Payment for Estimating

EVERY contractor is entitled to receive adequate payment for his work or services. None can long survive in business, or make a fair living profit out of it, if they do not include their overhead or operating expenses in their bills or charges for work and in their estimates or bids for a job.

Estimating the cost of a piece of work, or preparing a bid for the construction of a building, requires more or less labor, time and outlay of money, to say nothing of the application of the estimator's or bidder's technical or practical knowledge, acquired perhaps through years of study and experience.

"Estimates cheerfully furnished" has for years been a pitiable cry for business of some contractors. Of course, contractors should furnish estimates cheerfully and conscientiously, and they should also be able to do so competently, but in any case they should be entitled to and should charge for their services if asked or permitted to submit an estimate.

Every job figured upon should bear the cost of its own estimating expenses. These should not be carried forward to some future, prospective, uncertain job. No contractor, who, let us say, has bid unsuccessfully on a dozen jobs, can hope to be reimbursed for his entire overhead expense for these jobs by waiting to unload the same on some other owner whose job he may possibly, eventually land. If he so expects, he'll either never get that coveted job, or, if he does, he'll not make much of a profit out of it over and above his accumulated expenses, especially if he secured the job because he happened to be the "fortunate lowest bidder." And, by-and-bye, his overhead account, constantly piling up, will swamp him.

A movement started several years ago in the East to secure payment for estimating has resulted in the organization of the National Contractors' Association, Inc., with a membership now estimated approximately at from 5000 to 6000. In Wisconsin there are a large number of contractors in many of the principal cities, such as Milwaukee, Madison, Sheboygan, Green Bay, Oshkosh, Racine, Janesville, etc., who have adopted the plan and who are charging for estimating and are being paid for the same. No self-respecting owner or architect will ask a competent contractor to devote his time and experience to the preparation of an estimate without expecting to reimburse him for his services. And no cautious owner will give as much as three whoops for the "estimate" of an incompetent bidder. He has the privilege of selecting his bidders, and if he must pay for estimating he will exercise that privilege, the result of which will be to eliminate a number of irresponsible bidders, thus placing on a more satisfactory and legitimate basis the entire process of receiving bids and letting of the contracts; the performance of the work; the supervision of the same by the architect; the settlement of questions in dispute; the interpretation of plans and specifications; the payments by the owner as the work progresses, and the final settlement of all accounts for labor and material furnished. Even when six or eight of the most competent and conscientious bidders have prepared their estimates upon the identical set of plans and specifications it is no hazard to assert that there still will be a considerable difference between the highest and the lowest; and if in such case the contract is given to the lowest one the probability of his skinning the job wherever possible is little to be feared, and an owner who therefore is assured of good work and the lowest reasonable cost can well afford to pay for the cost of estimating, which, according to the established rates, will average less than one-tenth per cent of the cost of the job.

Architects, better than anyone else, know of the danger, the annoyance, the certainty of getting poor work in spite of the most careful supervision, if the contract is let to some of the lowest bidders in cases where a large number

of all kinds of more or less able contractors have been permitted to "put in" a bid. For that reason, if for none other, every reasonable architect is in favor of the payment for estimating, although some of them are slower than others in approving of the proposition. However, as the present prosperity wave will cause and necessitate an enormous amount of new building, and as contractors are unable with the scant supply of mechanics and laborers to take more than a limited amount of work, it would seem but natural that they would prefer to figure mainly with architects who favor the payment for estimating plan and who are not afraid, for petty or selfish reasons, to tell the owner of the plan and also tell him that contractors cannot afford and do not care to bid on jobs on which they are not to be paid for estimating.—Wisconsin Builders' Bulletin.

* * *

Building Materials in New York and in London

WITHIN the last four years the average cost of building materials in the New York market has much more than doubled, the increase being far greater on articles like bricks, sand and gravel that are not exported, do not require skilled labor or costly manufacturing plants and were not directly influenced by the war; it looks very much as if there is little hesitation in taking these excessive profits while the taking is good.

Wholesale Prices of Building Materials New York Market

	Average for 1915	July 1919	Increase Per cent.
Lime, common, per barrel	$1.24	$2.70	118
Cement, per barrel, net	1.03	2.05	99
Common brick, per thousand	5.94	16.00	170
Sand, per cubic yard	.50	1.25	150
Gravel, per cubic yard	.85	2.00	123
Crushed stone, per cubic yard	.85	1.75	106
Linseed oil, per gallon	.56	1.90	240
White lead in oil, per pound	.07	.13	86
Structural steel, per hundredweight	1.46	2.72	86
Hemlock, base price per thousand	[1]22.50	40.00	78
Yellow pine timber, per thousand, short leaf	[1]22.50	42.00	87
Yellow pine, per thousand, long leaf	[1]28.00	50.00	127
Spruce timber, per thousand	[1]28.00	48.00	71
Window glass (single united, inches, 40-N), per 50 sq. ft.	2.635	[2]6.20	136
Plate glass, 5-10 square feet, per square foot	.25⅓	.54	113

[1]July, 1915. [2]April, 1919.
Average increase 110 per cent.

In Great Britain matters are much worse, since June, 1914, London prices of construction materials have increased as follows:

Stock bricks 400%
Cement, by the ton 250%
Decorating ..... from 150 to 200%
Paint 200%

* * *

Anyhow, no matter how hard the times may be for contractors, look at the brewers!

* * *

So, remember on Thanksgiving Day—
Give Thanks!

Mr. Mullgardt Answers Questionnaire of Post-War Committee

EARLY in the year the Post-War Committee of the American Institute of Architects addressed a series of interrogations to prominent members of the profession for the purpose of obtaining an expression of opinion on questions of etiquette and certain changes of policy calculated to bring the architect into better repute. Mr. Louis C. Mullgardt was among the San Francisco architects who responded to the questionnaire, and believing his answers of interest to the readers of this magazine Mr. Mullgardt has consented to their publication and it is hoped some benefits to the profession will result.

Question—Are we in right relations with those whom we would serve—the Public?

Answer—The Institute's attitude toward the public assumes to place all practitioners on the same plane of proficiency through uniform compensation policies. As all practitioners are never equally proficient, why not abandon compensation provisions and allow each practitioner to establish the value of his own service.

Q.—What can we do to extend the field of our usefulness?

A.—Through Institute co-operation with the public through qualified local committees, appointed by the Institute, not by chapters.

Q.—Do we serve all of the public or only one class—the wealthy or the moderately wealthy?

A.—The Institute at present serves no class. It tries to serve the practitioner. It should serve the public through counsel in all matters architectural. Poor architecture is the result of poor design as good architecture is the result of good design. Both are created by the architect engaged, and without client's opportunity for counsel with the Institute. The Institute should be accredited with the responsibility for directly influencing American architecture. The present system merely encourages selfishness on the part of the practitioner, without being at all concerned about the quality of architecture produced.

Q.—Are we qualified by training and experience to render service over a wider field? Over the whole field, for rich and poor, for every kind of industry and human activity, and if not, how could this best be brought about?

A.—Yes; qualified members of the Institute could render greatest service to the public in the name of the Institute, if properly organized. The Institute should invest qualified members in every community with advisory power relative to community architectural problems, both public and private.

Q.—Do we pretend to a greater knowledge than we have?

A.—Yes and no, according to the individual character of the practitioner. The Institute will always find some pretenders in its membership.

Q.—In what way can we be of more service in public work, in legislation, in reform movements?

A.—Through local committees of qualified men designated by the Institute to assist legislation in all matters of architectural concern.

Q.—Should the architect perhaps specialize more, so as to become more expert in a few fields of endeavor? Would this make him more generally valuable to a larger number of people? Could architectural service be made more valuable to the public by being performed by a group of professional men of varying qualifications acting together rather than by an individual?

A.—This must be left to the discretion of the practitioner, as no organization can control individual predilection.

Q.—Is the basis of architects' compensation right? If he charged less would he be more used? Does the payment by means of a percentage on the cost of construction make him suspected as to self-interest? Would a cost plus fee basis of charge be fairer?

A.—As individual ability and nature of service varies, therefore the rate of compensation should not be uniform, nor should the Institute attempt to arbitrarily provide a minimum rate of compensation. The Institute usurps individual freedom in attempting to prescribe a uniform charge for results, the quality of which it cannot insure to the client. Every practitioner should be obliged to determine the value of his own service.

Q.—Are we in right relations with those with whom we would co-operate?

A.—The Institute must not assume to advise or regulate relationships between associated practitioners.

Q.—What can we do to improve our relations with the structural engineer? What will make evident our respective functions?

A.—It is a common mistake to discriminate between the functions of the architect and engineer. They may be one and the same person. Collaboration between an architect and engineer in separate offices is irrelevant. Satisfactory results, however achieved, are the only concern.

Q.—What will secure co-operation in the solution of building problems?

A.—The contracting parties.

Q.—What is our logical relation with the mechanical and electrical engineers, the lighting experts?

A.—That of co-operation for satisfactory results.

Q.—What is our logical relation to the big engineering corporations that aim to furnish all kinds of designing and supervisory services?

A.—Independence, or co-operation, or self-establishment in the same inclusive enterprise when desirable. The architect as MASTER BUILDER is eminently qualified to fulfil all these functions of co-operative work.

Q.—How can we improve our relations with the contractors and their sub-contractors?

A.—Through co-operating with sub-contractors always, and with contractors when desirable.

Q.—What is the reason for the success of the construction companies that aim to fulfil all these functions, designing, engineering and building?

A.—Due to co-operation between capital and such companies.

Q.—How can we co-operate with and help the workers and craftsmen (masons, carpenters, plumbers) dependent on the building industry as we are? How should we be interested in their organizations?

A.—By advocating compensation according to merit, on a sliding scale.

Q.—How should they participate in ours?

A.—Through qualification and good service, to insure perfect results.

Q.—How shall we interest ourselves in the producers of building materials?

A.—Through compliance with material provisions of plans and specifications.

Q.—How shall we help to standardize details of building products in common use?

A.—Why do it, when it will tend to restrict progress through discouraging continuous thought for invention.

Q.—How shall we help to establish bases of quality?

A.—By encouraging precise classification.

Q.—Shall we try to reduce the number and variety of each product that we demand?

A.—No. They should be precisely classified or graded for varying requirements.

Q.—What are our relations with those engaged in the allied arts (the painters and sculptors)?

A.—Similar to all other building interests.

Q.—Do we interest ourselves sufficiently in finding ways in which they can contribute their skill to the completion of our work?

A.—Some do and some don't.

Q.—Have we educated ourselves to understand what can be their contribution to modern building?

A.—Some of us have and some of us have not.

Q.—Do they know what we are driving at? Do we know it well enough to help in directing their education as decorators of buildings?

A.—Some do and some don't.

Q.—Are we in right relations with those who render the same service?

A.—If an architect's specific services are good and relations are agreeable, then the answer is yes!

Q.—Our fellow architects?

A.—As no two architects ever have rendered the same service, because their work and inclinations are naturally different, therefore right relationship seems impossible to define or provide.

Q.—Is the Code of Ethics (the Code of the A. I. A.) right? In what way could it be bettered? We know that men who acknowledge its validity still do not live up to it, but do any fail to live up to it because the code itself is wrong, unjust or impractical? Does the American Institute of Architects fill the need of a national organization of the profession?

A.—A code of ethics, if required, should be brief. It will not produce good architecture, correct bad manners, or make an honest man out of one who is inclined to be otherwise. His membership, if prejudicial to the Institute, should be cancelled.

Q.—Does cost of membership stand in the way?

A.—No! not cost of membership but lack of useful organization. The public must be shown that the Institute is really interested in progressive architecture. The public recognizes the Institute as an organization, chiefly interested in its members' financial welfare; that the creation of good architecture is of no apparent concern to the Institute.

Q.—Do we need regional branches, or state associations?

A.—We should co-operate with existing community organizations, to guide them toward better architecture, through Institute committees, previously defined.

Q.—What kind of an architectural association do you think can be of real help to you?

A.—One in which all the best men in the profession co-operate in guiding the destinies of American architecture.

Q.—Is it in any way true that many architects have the mistaken notion that the A. I. A. has fixed a rate of professional charge which is mandatory upon its members, and does this keep many out?

A.—Many low grade practitioners have joined the Institute to insure a higher rate for service than they can otherwise obtain. They impose upon the public, using the prestige gained through Institute membership. The Institute should concern itself with quality of membership, not quantity.

Q.—What improvement could be made in the schedule of customary charges to make clear that it is only advisory and only intends to bar competition as to price between architects?

A.—The schedule has never barred competition as to price between architects. Every architect should charge only what his services are actually worth. The Institute should not endeavor to suggest the value of any practitioner's service. Such values necessarily vary according to quality and character and should therefore be determined between architect and client.

Q.—Would registration of architects by the state be helpful in your state (if it is not already in force)? If it is in force in your state has it been, or do you think it may become of value to improve the status of the architect?

A.—This depends upon the form of qualification to become a licensed practitioner. It is advisable to license architects as a higher standard is assured thereby. It should be designed to improve the status of architecture and not the status of the architect. It has seemingly been of benefit in the state of California. Good architecture can only come from those who can create good designs. State licensing does not insure this most important requisite. This should be the function of the Institute.

Q.—What can be done to improve our educational system? Do the architectural schools give the men the right kind of training? How can the men in active practice help to correct the educational methods, if they need change? Do we need a new kind of architectural school? Is the office training (that of men brought up in the offices) all that could be desired? How can it be improved and supplemented? Is the entry into the profession right? Should the men from school or office training drift into practice (at the expense of their first clients) as they do? Should not some intermediate step of partial responsibility be provided?

A.—Too much time is devoted by architectural schools in an effort to teach students to develop designs for colossal problems, such as would tax the mature ability of the greatest practitioners. Designing cannot be taught. It is a natural development which grows out of one's accumulated knowledge, if the individual is naturally constituted to become a designer, and only in that event. It is a creative quality which few men possess. Our students begin at the top of the ladder in architectural schools. Architectural students should be trained first in all of the fundamentally scientific elements of architecture, thereby to become proficient, at least, in that which constitutes the science of the profession. The schools cannot hope to create designers. They will develop themselves when they have learned the rudiments of architecture. All good architecture is invention. All men cannot by nature become inventors. All men can become scientifically useful in the architectural profession. Few can become creators of good designs. Men lacking this ability should not be encouraged in their efforts to design, out of consideration for the architecture of our country.

No man should enter private practice under ten years scholastic and first class practical experience in architecture.

Q.—Do the young men now have a fair chance to get into practice on their own account? How can a better way be provided whereby the experience of older practitioners may be available to the young man during his first years of practice?

A.—The new practitioner should properly begin with small things and work up to the field of greater responsibility, thereby qualifying through process of gradual development. High standard in quality of design and scientific results are the chief requisites.

Q.—Do our professional journals truly represent the real problems, interests and opinions of the active professional body?

A.—We may not be able to control professional journals published by private corporations. The journal of the Institute should in any event represent the best of modern architecture.

Competitions

Competitions should not be discouraged. The conditions governing a competition should be pre-arranged between those who are invited to compete. Each architect should determine the value of his own services. The relative merits of competitive designs should be adjudged by the competitors, through secret ballot process of elimination.

Institute Membership

Membership in the Institute should be independent of any other organization whether chapter or otherwise. It should be based on standard of qualification only.

The Public

One of the most important duties which the Institute has before it is that of creating intimate relationship with the public whereby the Institute will come into direct touch with all organizations which are working for community progress. They are all more or less interested in the architectural field and should therefore receive guidance from a national architectural organization as previously indicated.

Architects' Compensation

If the Institute continues to make recommendations concerning compensation, then a proportionate increase should be assigned for preliminary service.

Preliminary service demands ability to create an appropriate design. Preliminary service necessarily embraces that which is most valuable to the client, and should be charged for accordingly whether in competition or otherwise. Preliminary service in competition is of equal importance to preliminary service without competition. It represents the same degree of service and importance and should therefore not be discriminated against.

* * *

Should Architects Advertise?

THE publication of a page advertisement of architects specializing in school work in the leading school publication is interesting and significant of the changing attitude of members of this profession toward advertising. While for many years the ban has been placed on the use of advertisements by architects for the purpose of getting clients, the fact that architects as a body have resorted to business promotion methods along other lines has helped to demonstrate the inconsistency of the ruling regarding advertising in publications.

The architect is permitted to solicit commissions directly in person, and to use letters for this purpose. If he may seek clients in this fashion, why should he not offer his services through the medium of a dignified advertisement, especially when this is directed to a particular group of people, to whom he is in a position to render a valuable specialized service?

There is no analogy between the medical man and the architect, and the fact that doctors do not advertise does not represent an argument against architects advertising. Doctors are not permitted to solicit cases either directly or indirectly, and the freedom with which architects are permitted to present their claims to consideration puts them in a different class from that occupied by the physicians.

The tendency toward specialization on the part of architects, which has been marked of recent years, makes these professional men more interested than heretofore in cultivating those in the fields with which their work is principally connected. Class, trade and technical papers in those fields are logical mediums by means of which to make their announcements and get in touch with those desiring specialized architectural service.

Labor and Production—No Immediate Decline

By NOBLE FOSTER HOGGSON

THE chief reason Bolshevism has failed and will continue to fail to make any headway in this country is that the American workingman, in spite of the high cost of living and other troubles, real or imagined, is the most prosperous laborer in the world. In fact, he is the representative of the most prosperous class in this country if his prosperity be estimated on a scientific basis of comparative values rather than money values, for he has made greater strides toward equalizing income and outgo than any other person in the social scale, and he alone has been able to demand and get an increase in income as soon as living costs have risen.

The average laborer in this country, even the unskilled laborer, is not an ignorant person. He knows that he is prosperous, and that he will continue to be prosperous if he continues to watch out for his own welfare as assiduously as he has done in the past and does not become too unreasonable in his demands; he knows that as soon as the cost of living advances his wages will advance, and that, whatever the conditions of life may be for others, he will always be able to earn a living wage.

Leaders of industry who are disturbed by the high labor cost of their products and who are hoping to see the cost of labor decline in the near future are due to be disappointed, for the relative cost of labor will remain the same a year from today and the likelihood is that the actual cost will be higher rather than lower. Those industrial leaders who, in addition to hoping for such a decline in the wage scale, are intentionally or unintentionally helping to bring it about by deferring necessary business activities such as building operations are, as a matter of fact, unwittingly helping, instead of checking, a tendency which would give the Bolshevist the opportunity he seeks in America—they are threatening the sources of that prosperity which is today making the American workingman one of the strongest bulwarks against the Bolshevist and are undermining the workingman's confidence in the good sense and far-sightedness of his employer.

The danger that such a situation as this may be created is not, however, an imminent danger, because the industrial leaders who take this short-sighted view are growing fewer every day. The number of contracts for new construction operations that have been let in the past few months and are due to be let in the next few weeks show that many business men are awake to the need of going full speed ahead instead of waiting for cost declines that will not come. The slower investors will be forced to trail behind their more progressive leaders and in the end will pay as high, or perhaps higher, for their postponed work, in addition to losing time and profit that a little foresight would have saved them.

A lesson learned from the war itself points the way out of the maze of uncertainty and unrest which has followed the sudden transition from war to peace. The employer, the merchant, the industrial producer, all are confident of the future, yet few dare start ahead with firm tread. The reason for the uncertainty is lack of confidence. The broad confidence which every man had in his neighbor while the war was on dwindled to a pin-point when the war emergency disappeared.

Yet here lies the opportunity for making the industrial life of the nation a better and more stable element in its welfare. If each class that is engaged in the task of restoring the country's prosperity would help revive the spirit of trust, confidence and co-operation manifested during the war, believing that their better natures should stand revealed in peace times as

well as during the stress of war, a happy start would be gained toward the reconstruction of America into a better, happier, more prosperous place in which to live. The trend toward such a movement for the substitution of co-operation for competition has already shown itself, and it promises to bring business and industrial relations to a higher level than has ever been reached before.

Without close co-operation the war would never have been won, and without continued co-operation along both ideal and practical planes it will never be possible for this country to meet successfully the vital issues created by the complex reconstruction problems of the day and the sudden change from abnormal war conditions to subnormal peace conditions. But no amount of co-operation will be of much avail if it consists merely of a passive laying aside of jealousies and antagonisms. The immediate, urgent need is for production—active production on a scale such as America has never seen.

* * *

Fire Losses and Fire Prevention

A MARKED decrease in the total fire losses in the United States and Canada is shown by the following table, giving the total losses to property by fire during the months of June, July, August and September, 1919. As is usual, more than half the total loss has occurred in congested and mercantile districts which are largely left during the night without sufficient watchman or fire alarm service. As will be noted, dwellings comprise a surprisingly small percentage, especially in view of the fact that we are frequently confronted with forceful statements by insurance men that wooden dwellings and shingle roofs are the greatest menace to life and property.

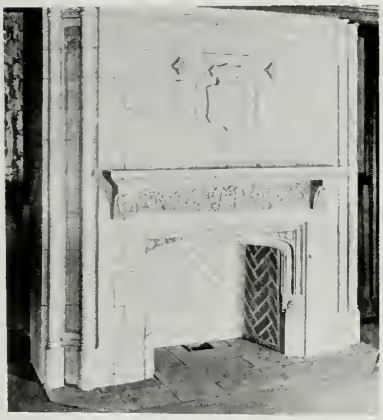
Warehouses and factories	41.6%	$29,707,000
Business section	12.	8,972,000
Oil refineries, mills and tanks	10.3	7,275,000
Tornado	8.6	6,000,000
Saw mills, yards and millwork	7.2	5,135,000
Grain elevators and crops	3.5	2,786,000
*Dwellings	3.5	2,776,000
Wharves, coal sheds, bridges and boats	3.4	2,665,000
Hotels	3.2	2,165,000
Stables and barns	1.8	1,227,000
Garages	1.6	922,000
Theatres, schools and churches	1.4	662,000
Timber land and forests	.8	530,000
Government property	.1	75,000
Total	100. %	$70,918,000

What we most need, according to the Architectural and Building Code Service of the National Lumber Manufacturers' Association, are intelligent men at the head of municipal fire prevention bureaus with broad enough vision to see the necessity for proper building ordinances regulating construction and fire prevention in our congested business districts, where more than half of our annual fire loss occurs.

The insurance men, keen to ride the "combustible roof" and not the "defective flue"—the real cause of 75% of roof fires, are still harping on the huge loss by conflagration in 1916 but do not state that conflagrations in 1918 and 1919 were practically nil. What is needed is an intensive campaign against the "defective flue" and the careless individual. If laws are made to punish those responsible for *starting* fires, the *spread* of fire will be a negligible item.

Designing the Fireplace

By ERI H. RICHARDSON



DINING-ROOM MANTEL FOR
MR. E. A. CHRISTENSON
C. E. Gottschalk, Architect

THE fireplace, if doing its full duty as the very heart and centre of the home, offers an unusual opportunity for some indication of the owner's interests and character and furthermore for a means of expressing the subtle comfort and hospitality which no other part of the home and no other furnishing in the house can so fully express.

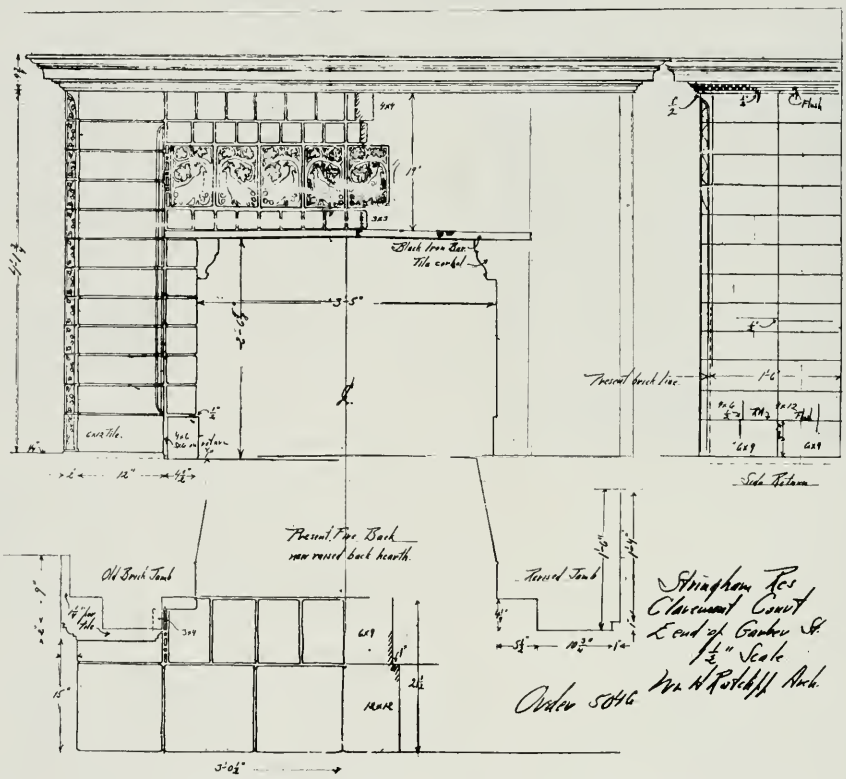
From the writer's viewpoint, the fireplace is too intimate a thing to permit of imposing upon its owner a mere reproduction of some classic type, except in the most formal of homes. It is too much a part of the interior furnishings to excuse purely structural material which should be in the foundation or in the chimney tops, except in the most primitive surroundings, or except when used in conjunction with other more finished and artistic material. It is too important, both as a permanent detail of the home and as evidence of the owner's personality and sense of hospitality to permit of its being slighted or cheapened.

Build the fireplace small or make it plain or let it consist of nothing more than a hole in the wall if you like but let it be consistent and make that hole the most attractive, warmth giving and inviting hole in the wall possible. Build into it good proportions, with parts arranged to give a maximum of heat with fullest economy of fuel, line it with material of good color and of a size proportional to other details of the room, add a touch of interest and if the exchecquer permits and the interior demands, make it the feature which its importance demands and place other things in proper relation, but have that hole in the wall right. It will pay ten times over in as many years in comfort, economy and lasting satisfaction.

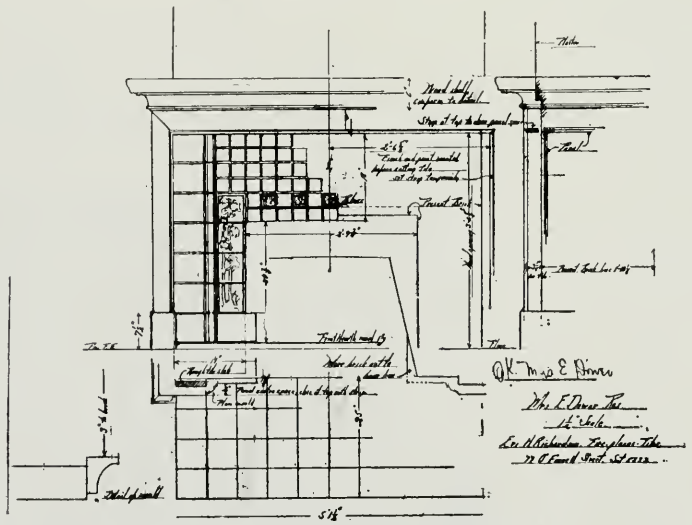
If all the business men who figure their profits on a six per cent margin could realize what percentage of their fuel bill will go up the flue they would plan the fireplace first on the next occasion of a home building.

A volume could be written on the subject

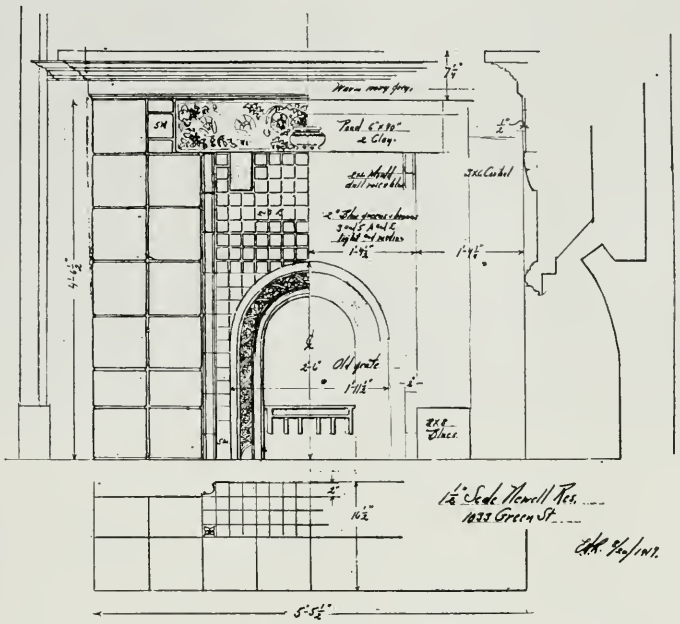
LIVING-ROOM MANTEL FOR MRS. G. W. BORCHERS
Hill and Higbie, Architects



LIVING-ROOM MANTEL FOR MR. F. D. STRINGHAM
W. H. Ratcliff, Jr., Architect

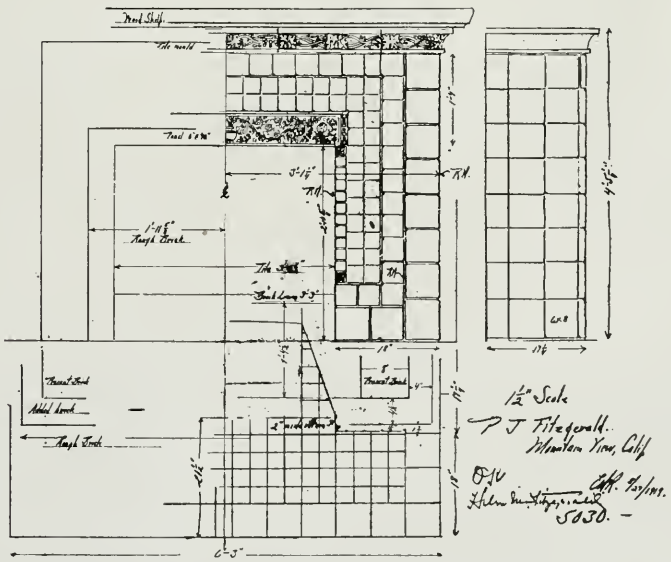


A MANTEL IN A HOUSE AT BURLINGAME
Mr. and Mrs. E. Dower, Owners



DINING-ROOM MANTEL FOR MR. NEWELL

A narrow space between doors, high ceiling and very small flue (6" square) offered a difficult problem which was solved by using the old cast-iron grate



LIVING-ROOM MANTEL FOR MRS. P. J. FITZGERALD, MOUNTAIN VIEW

Mr. H. C. Keller, Interior Decorator

of designing fireplaces and it would leave volumes untold. The writer has built more than seven hundred fireplaces, not two alike, and each new one offers some new opportunity for individual expression.

A designer may know the five orders, the periods of interior detail and the principals of design and composition and still make a sorry failure of a fireplace. Let our designer start with a few years' practical experience in building fireplaces and chimneys, then let him improve his faculties for design with a study of architectural forms and their application, add a life time of character building that his impulses will all be in the right direction and so that he may properly and justly exercise his prerogatives, also a real love of his work and a whole hearted desire to serve; finally equip him with all the material adjuncts of the business and he is ready to meet Mrs. John Brown who is building a new home and to serve her architect in this special capacity.

Enter Mrs. Brown with her architect. Where is the house; what are its surroundings, the general design, special period and spirit of rendering? You say, "What in blazes have the surroundings got to do with the fireplace? It's going on the inside, not on the outside of the house!" Well, let us see: Here is a grapevine trellis outside the dining-room window; all right, Mr. Batch-o' tiles makes a perfectly beautiful little grapevine mould in dull browns and blues which we will substitute for the Grecian egg and dart indicated around the fireplace opening.

So it goes, questions, suggestions, conditions on the job all enter into the making of fireplaces. The owner has an idea, or admires certain features of different drawings. His or her tastes, interests and wishes are gradually revealed. The architect has the general scheme in mind and has already indicated in a general way his requirements and suggestions, supplemented possibly with a sketch or general idea; the plan and elevation of the room or conditions on the job indicate some further requirement and soon the fireplace has taken form in thought. Once committed to paper it requires only re-study, revision and approval to make it a part of the architect's general scheme.

As to the designer, he is a mere incident in the proceedings, a channel so to speak, for the reflection of all the highest ideals possible to our little hole in the wall. But if, mayhap, he has applied his spiritual sense of things, hearing where words were left unspoken, seeing lines which did not yet exist, and adding to his full mede of knowledge of a particular subject some special service in the way of a clear working detail and instructions accompanying the best and most applicable material at hand, thereby saving the architect's busy office and for all time satisfying another owner, is he not a most happy and fortunate incident?

* * *

What is Efficiency?

Some one says that efficiency is the science of human accomplishment. In other words, it is the art of doing things in the best possible way. The whole meaning of efficiency is getting away from immature, slipshod, slovenly, cumbersome, wasteful methods. It is order against disorder, scientific against haphazard, unscientific methods. Efficiency teaches us to exercise our judgment, to use our mind before doing anything. The brain should always move first; the judgment should act before the feet start on any errand, before the hands begin their task. This would prevent the duplication of efforts, the doing of work over and over again because of lack of system and method, and it would eliminate all unnecessary movements.—New Success.

RESIDENCE OF MR. T. H. SHERRARD, PORTLAND, OREGON
Wade Pipes, Architect

Zoning and City Planning for Portland*

By CHARLES HENRY CHENEY, Architect †

DURING the past fifteen years there has been almost a reversal of all our former ideas of streets and what they are for, how they should be laid out, paved, parked and improved. The coming of the automobile and the fast moving vehicle with very heavy loads of as much as ten and twelve tons on two wheels, has made necessary more permanent and heavier hard surface pavement, and more direct through routes, carrying more than ten times as much travel as we were accustomed to only a few years ago.

Where city engineers used to think that every street should be laid out a through street, it is now found that we can only afford to provide the wider and heavier pavement necessary to carry the traffic on about every fifth or sixth street, called a main traffic thoroughfare or major street. Although most cities have begun to recognize the necessity for settling definitely which are the major streets of the city, a complete major street plan has as yet been worked out in only a few cases.

As soon as hard surface pavement is now laid on a street of any length it immediately attracts all the travel from the surrounding neighborhood, becomes more dangerous for children, dusty, dirty and noisy for the houses fronting on it, and therefore less desirable in many ways as a residence street, except for the larger type of dwelling which can afford to set well back from the roadway. In Berkeley and a number of cities recently investigated, it has been established that families, particularly with children, seeking either to rent or buy a home, will pay more, or at least give preference in nearly every case to a quiet out-of-the-way street, free from the speeder and through traffic.

Again, the wider, heavier pavement necessary for a main traffic artery of travel is more expensive than that required on an ordinary

* This is a second article outlining the findings of the Portland City Planning Commission, continuing that published in our issue of March, 1919. The two form a summary of the report of the commission printed in their Bulletin No. 1, June, 1919, entitled "Zoning and City Planning for Portland."

† Member American City Planning Institute and consultant to the Portland City Planning Commission.

residence street with little or no traffic. It is hardly fair to make the property fronting on such a traveled thoroughfare pay the additional cost of such paving for the benefit of a heavy through traffic, which originates far away and probably passes through without service or benefit to the abutting property owner. Paying the other fellow's bill is always unpopular, and this sense of injustice to the growth of the city stops by protest many a paving project of urgent importance. San Francisco and other cities are therefore paying from one-third to one-half the original cost of pavements on such thoroughfares. In Berkeley recently, San Pablo avenue, running across the west end of town, from Oakland on the south to Richmond on the north, had to be repaved with a wide, heavy, traffic pavement, for a long stretch where the total cost of pavement was more per front than the sale value of the abutting property. The county, therefore, paved one-half the street as a county highway in order not to make the burden too heavy or unfair to the abutting owners.

On the basis of paving done in the past and the normal increase of population anticipated, I have roughly estimated that approximately $5,000,000 of new paving would ordinarily be done in Portland during the next five years. An early determination of a major street plan for Portland which can be established by ordinance as the permanent scheme of traffic arteries for the city is therefore essential. The Bennett plan, adopted as a general ideal by vote of the people in 1913, aims toward such a system.

One of the first problems, then, before the new City Planning Commission, and one of the most important next to zoning, is the determination of a Major Street Plan. Yet obviously a final scheme of major streets can hardly be settled upon until a comprehensive zone ordinance, establishing the business and industrial districts which are to be served by these traffic streets, has been definitely determined upon.

Minor Residential Streets

As already pointed out, it is of grave importance to the solution of the housing problem in Portland to settle upon the minor residence streets and residential zones which they serve, for the protection of children and the maintenance of quiet and restful, homelike neighborhoods, free from the dust, noise and inconvenience of through traffic. After twenty years of experience with the development of the Roland Park district in Baltimore, which is probably the finest residential suburb of the United States, with the best proteced housing, Mr. E. H. Bouton says:

Relation of Local Streets to Thoroughfares

"While, wherever possible, reasonably convenient communication with neighboring thoroughfares must be provided, the highly desirable object of preserving the local street from the invasion of through traffic will often require that this communication should not be too direct, or at least too obvious, and in cases where the tendency of traffic might be, to some extent, to choose the local street instead of an equally convenient thoroughfare, it will sometimes be desirable deliberately to make the communication between the thoroughfare and the local street sufficiently indirect, or uninviting to through traffic, to prevent such tendency.*

"The chief mistakes made in the treatment of purely local streets have commonly arisen, in the writer's opinion, from a failure to discriminate, with sufficient sharpness, between the traffic, in respect of both its character and its volume, to which local streets are subjected, and that which thoroughfares are

* E. H. Bouton in City Planning, edited by John Nolen, p. 96.

ENTRANCE, PORTLAND, OREGON, RESIDENCE

called upon to accommodate. The result has been a failure properly to discriminate between the necessary requirements of the two. Purely local streets are made unnecessarily broad—which results in a waste of valuable land.**

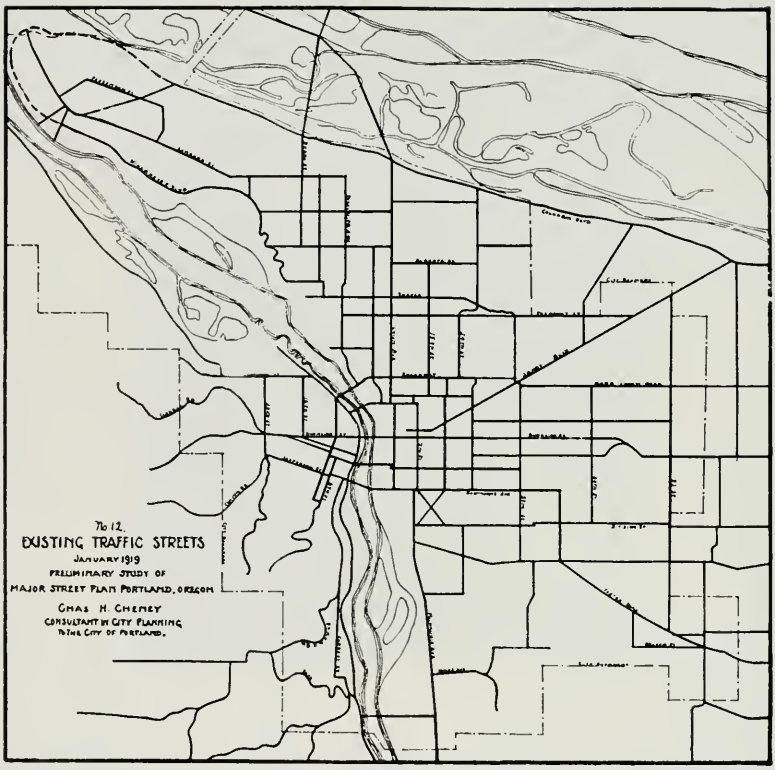
As has been common practice in many cities, Portland now requires (Ordinance No. 32923) that all 80-foot streets shall have 50-foot roadways, 60-foot streets 36-foot roadways, 50-foot streets 28-foot roadways, 40-foot streets 24-foot roadways, and 30-foot streets 18-foot roadways. Recently,. however, in outside residential districts a special ordinance has generally been passed, on recommendation of the City Engineer, permitting 30-foot or 28-foot roadways on what seemed to be minor residential streets.

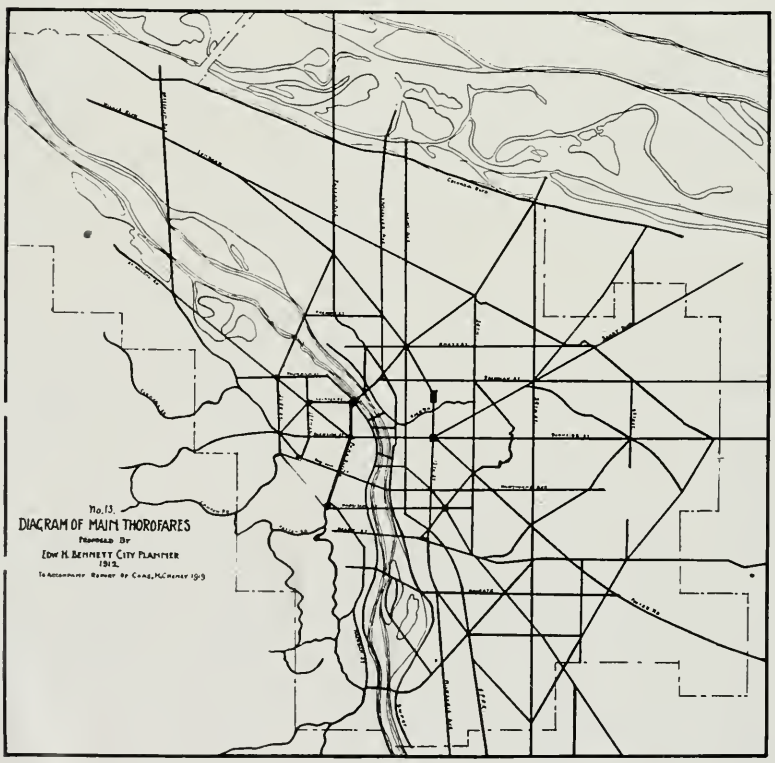
It is our belief, backed by the experience observed in other cities, that this is much too heavy a burden for paving upon the small home owner, and that it is imperative to a proper solution of Portland's industrial housing problem for the city to permit the building of 16-foot and 18-foot roadways (sufficient for two lines of travel, one in each direction) on established minor residential streets. This does not mean a narrowing of the total street width, which should stay the same, the sidewalk parking area being widened to take up the difference.

In districts where homes of a value less than $2500 prevail the city should also consider permitting sidewalks on one side of the street only, paid for by both sides of the street.

The City Engineer's office informs us that the ordinary 36-foot hard surface pavement, 6 inches thick, with 6-foot sidewalks on both sides of the street, including curbs and grading, costs approximately $6.25 per running foot, where the ground is reasonably level or only slightly sloping. An 18-foot pavement with 5-foot sidewalks would cost only $4.00 per running foot. This would make

** The same, p. 89.


No 12.
EXISTING TRAFFIC STREETS
JANUARY 1919
PRELIMINARY STUDY OF
MAJOR STREET PLAN PORTLAND, OREGON
CHAS H. CHENEY
CONSULTANT IN CITY PLANNING
TO THE CITY OF PORTLAND.


No. 13.
DIAGRAM OF MAIN THOROFARES
PROPOSED BY
EDW H. BENNETT CITY PLANNER
1912.
TO ACCOMPANY REPORT OF CHAS. H. CHENEY 1919

a saving of $132.50 on a 50-foot lot, a very considerable item proportionally when the ordinary wage-earner cannot afford an improved lot that costs more than $400 to $500, with all street improvements.

Serious consideration also should be given the question as to whether a 16-foot pavement with one sidewalk or no sidewalks at all is not amply sufficient. In a number of the newer suburbs of this country and in the garden cities of England, such an arrangement for the minor residential streets has often been used with success. Certainly no traffic originates on such residence streets requiring a greater width of roadway than 16 feet, and the narrower pavement is much less dangerous to children because it is not attractive to speeders.

Considered from this new point of view, some municipalities have begun to realize that a lot of money put into paving which is now unnecessary, could have been used to splendid advantage in other ways; thus, Berkeley, in an exact measurement made in 1914 by a reputable engineer, discovered $187,000 of needless paving in one typical square mile of the city; at which rate it was figured that there must be a total of between $2,000,000 and $3,000,000 of paving in the whole city limits laid out to no purpose. This same expenditure would have parked most of the city or built many needed schools and other public works, or saved the taxpayers in other ways.

Portland can rightfully boast of having probably more miles of well-paved streets than any other city on the Coast, but this paving has placed a burden on the cost of land which is serious and perhaps retarding the building of homes in some areas. Before further paving of this kind is undertaken, the City Planning Commission should consider every possible means where savings can be made on minor streets, and where more paving can be put down to link up and widen major traffic arteries.

Are There Too Many Streets in Portland?

Once minor residential streets are determined upon, it becomes evident that 200-foot blocks, particularly in outlying districts, are an extravagance: in fact, 400 and 500-foot residential blocks are a protection from the intrusion of needless traffic. It should be evident that for every 460-foot block cut up into two 200-foot blocks, with a 60-foot cross street between them, the original land subdivider has had to add on 15 per cent more to the cost of each lot than he would if permitted to cut his blocks 460 feet long to make up for the land lost or wasted in the extra cross street. Preliminary observation of the city seems to indicate that the short 200-foot blocks place a very heavy burden of overhead expense for this land lost in unnecessary streets and for their paving—a burden not usual to most cities. Except in the central down-town business part of the city, it might be advisable to consider relieving this expensive burden by closing those portions of streets not needed.

We understand that there are serious legal difficulties involved in the closing of streets, and that it is too serious a question to work out enabling legislation before the Legislature of 1921, by which date the city will probably have established its business, residential and industrial zones by ordinance, and determined the major street plan, which will help to educate the people of the city to an understanding of the need for the legislation involved.

Portland is probably very fortunate in thus having too many streets, or considerable areas of streets that can be closed to advantage, because modern city planning practice is to use such areas as a *quid pro quo*, or valuable consideration in exchange for the widening found necessary on main traffic arteries. Many of the down-town business streets are now much too narrow and will probably have to go through a costly, though profitable, widening process.

In conclusion, the above points in regard to the necessity for working out now a major street plan, minor residence streets and adequate planning for pos-

sible future growth in the next twenty-five years, are raised in a preliminary way only at this time. While they must be kept in mind during the period of working out the zoning regulations necessary to each part of the city, sound final recommendations on streets and traffic can hardly be made until the boundaries of business, residence, and industrial districts, and height limits establishing the amount of congestion to be handled in each part of the city, have been settled upon.

Reasons for the Adoption of a Comprehensive Zone Ordinance

Zoning or districting is the first necessary step in sensibly planning the city for the future. All American cities, almost without exception, are in a jumbled, mixed up, unhappy and unhealthy state for lack of orderly building regulation. In self-defense, progressive city governments throughout the country are now therefore taking up zoning in a businesslike way.

Now is the time to do this. Portland, like many other Coast cities, is growing fast. Those that are not, seem largely to be held back for lack of making the most of their opportunities or of curing their disadvantages on a systematic plan.

How to go about taking care of the future is the first concern of a city planning commission. Obviously, it is not good business to attempt to plan for better housing, for railroad readjustments, school park, playground and boulevard systems, or to lay out a paving programme for the next ten years, until the city has decided definitely the appropriate districts for residences, for business and for industry, and has with a reasonable allowance for future growth established those districts so that one use of buildings may not intrude upon another and thus destroy not only the desirability of neighborhoods, but actually impede the growth of the city. The unlimited scattering of industries into retail business sections, and even into residence districts, the intrusion of the garage, laundry and apartments into home neighborhoods, is not only unnecessary, but actually causes the depreciation of millions of dollars of adjoining property in the cities of this country annually.

Zoning is Not New

Zoning regulations are not new in this country. Height limits have for many years been established in Boston, Baltimore, Los Angeles and a great many other cities of the United States. Los Angeles in 1909 established use districts for residence, business and industry, in an ordinance which has been upheld several times by the United States Supreme Court. Such regulations in large European cities date back to Napoleon's time. One of the reasons why Europeans characterize America as the most wasteful country on earth is because of our lack of such protection of property investments.

St. Louis in 1918, and New York previously in 1916, passed comprehensive zone ordinances that have shown the way to many other cities. Alameda in February, 1919, and other California cities have also made great progress.

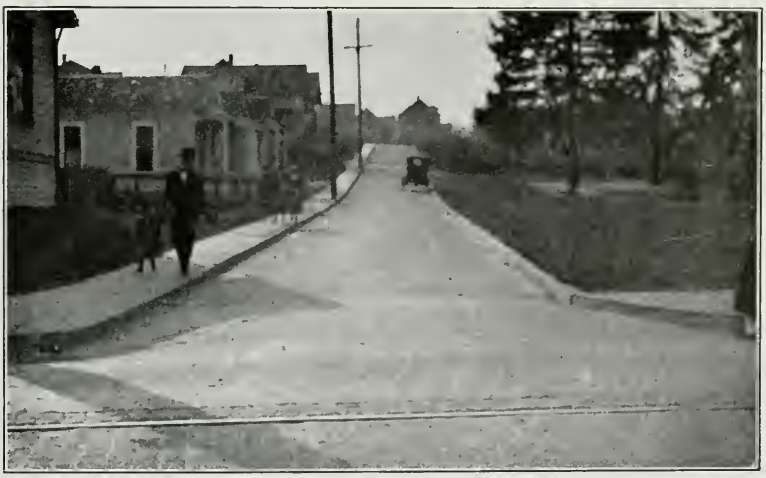
Is Zoning Legal

Zoning that is not arbitrary has been upheld in many decisions, the following being the most notable:—

"It is to be remembered that we are dealing with one of the most essential powers of government (the police power)—one that is the least limitable. It may indeed seem harsh in its exercise, usually is on some individual, but the imperative necessity for its existence precludes any limitations upon it when not exerted arbitrarily. A vested interest cannot be asserted against it because of conditions once obtaining. To so hold would preclude development and fix a city forever in its primitive conditions.

IVON STREET, NEAR EAST TWENTY-THIRD STREET, PORTLAND
36-FOOT ROADWAY

Recently recommended for a single family dwelling zone; it has $1000 a block of needless paving



HAIG STREET, PORTLAND, 15-FOOT 8-INCH ROADWAY

All that is necessary or desirable for local traffic on a minor residence street. Through traffic and the speeder find it undesirable, which is a protection to the home owner with children

"There must be progress, and if in its march private interests are in the way, they must yield to the good of the community."—Justice McKenna, of the United States Supreme Court, in upholding the Los Angeles Zone Ordinance in Hadacheck vs. Sebastian, 36 Sup. Ct. 143 (1915).

It must be realized that "restricting a man's free use of his own private property is one of the most serious responsibilities that a city can undertake." The time has come, however, when Portland can no longer shirk this responsibility, and the whole city should be protected in districts which will guarantee the greatest amount of public good for the least amount of individual damage to private property affected.

Want New Population to Benefit Portland

The next 150,000 people to come to Portland (and we believe they may be expected in less than ten years), must settle here to the benefit of those already here, and not to their detriment. Strange as it may seem, it is found in most cities that the newcomers are liable, unless properly guided by city regulations, to intrude stables, garages and small stores in residence districts, to congest the buildings unsuited for additional tenants, and thereby to menace the health and safety of the community, as well as to depreciate the surrounding property values.

Two Classes of Industrial Districts Necessary

Manufacturers of Portland, in answer to a questionnaire sent out in October, 1918, generally agreed that concentration of like kinds of business together would prove profitable and that there should be at least two classes of industrial districts; namely, one for ordinary manufacturing of food products, furniture, etc., and one for those plants which have offensive odors, smoke or noise. The latter type of heavier industries should be farther away in the outskirts of the city, where prevailing winds will carry away the smoke, dust and odor produced. The proposed zone ordinance outline adopted by the City Planning Commission February 19, 1919, therefore includes the following two classes:

Industrial Districts of Class VII.—Ordinary, not obnoxious, factories, warehouses and industries, including any business use.

Class VIII.—Obnoxious and odor producing factories, including any kind of business use.

There might be a number of districts of each class in various parts of the city, but it is probable that most of the Class VIII. districts will have to be out along the Columbia river, where the stockyards and similar odor producers have already located, so as not to be proceeded against as a nuisance.

Factories the Portland Manufacturers Say Should Be Together

In answer to the question, "What kind of factories would you like to see concentrated together for mutual self protection, for fire and police protection, and are there certain kinds of industries that you cannot afford to be next to?", the principal industries of Portland replied as follows:

A ship plant says: "Shipbuilding, iron works and allied trades. No dry lumber products, explosives, chemicals, paints and oils."

A wood shipbuilding plant: "Sawmills."

An iron foundry says: "Cannot afford to be next to woodworking plants on account of fire risk."

A machine shop replies: "Factories engaged in similar lines of work are better off if grouped together."

CONGESTED STREET IN WHOLESALE DISTRICT, PORTLAND, OREGON

Another maker of castings: "There are certain kinds of industries that we cannot afford to be next to."

A flour mill replies: "As manufacturers of food stuffs, could not afford to be next factories mentioned."

Sash and door factory: "Do not want to be next to any factory manufacturing inflammable or explosive products."

Bag factory: "Factories which are heavy smoke producers or give up gases and fumes offensive or injurious to good health to be in certain districts. Users of explosives, etc., in another district."

Odor and Smoke-producing Factories Desired in Separate Zones

The question was asked, "Would the establishment, adjoining your property, of factories for bone or fat boiling or for making soap, candles, fertilizer, glue or chemicals; a slaughter house, tannery, tallow chandlery, gasoline or oil storage tanks, or a crematory hurt your business?"

One hundred and twenty-one local concerns answered "Yes."

The Use of Property Map shows that Portland has naturally become divided into more or less clearly defined existing districts of different occupancy, use and type of building construction. There is the well developed central business and retail store district, and at different crossroads are found many minor business districts, each of which has a fringe of garages, fuel yards and similar uses of buildings around it; warehouse and industrial districts; and the general large area of the city which is entirely residential.

Evidently, as similar surveys have developed in New York and other cities, there are strong social and economic forces working towards a natural segregation of buildings, according to type and use, and in general the greatest land values and rentals seem to be obtained where this segregation and uniformity are most complete. One purpose of districting regulations is to strengthen and supplement the natural trend towards such segregation.

Yet, in spite of the natural trend toward this segregation, building development in many parts of Portland has been very haphazard. The natural trend has not been strong enough to prevent the invasion of districts by harmful and inappropriate uses of buildings. Once a district has been thus invaded, rents and property values decline and it is difficult ever to reclaim the district to its more appropriate uses.

Zone Ordinance Prevents Depreciation

Individual property owners are helpless to prevent these intrusions and the depreciation of their property. The establishment of a zone ordinance will do for individual owners what they cannot now do for themselves—set up uniform restrictions that will protect each against his neighbor, and thus be a benefit to all.

While we are not, as yet, in possession of sufficient data to accurately measure it, we can say for certainty that the destruction of property values throughout both the business and residential sections, on account of these intrusions, has already reached very large proportions. It does not stop with the owners and areas immediately affected, but is reflected in depressed values throughout the city.

With over $300,000,000 already invested in Portland real estate, a plan of city building is necessary that will tend to protect these property values, not only for individual owners, but for the community as a whole.

First of all, it is only sensible to protect the areas of the city as yet unspoiled, and to insure that the millions of dollars that must be invested in improvements in the next few years, are spent for the permanent upbuilding of the city. Permanence, stability of property values and investments can only be secured by far-sighted zoning regulations that will harmonize the private interest of owners and the health, safety and convenience of the public.

Portland is growing rapidly. While the war has temporarily held up most building construction, and the high price of materials and labor may prevent much activity for a time, a great rush of building is sure to take place soon, in order to take up the lap and provide for the natural increase of population. The city is as yet not as badly spoiled as it will be if the improper and unsuited use of buildings continues to be licensed by the issuance of building permits by the city government. It would seem obvious that a comprehensive zone ordinance for the whole city cannot be too soon adopted by the City Council.

Summary of Reasons for Zoning

The immediate preparation of a complete zone plan and ordinance has therefore been decided upon, regulating the use to which buildings hereafter may be put up, their height and the proportion of the lot which may be occupied. This proposal is made with a keen appreciation of the unfortunate results of the lack of such regulations in the past and the urgent need of them to insure better control of future growth. The results of such control as reported by a number of cities, would be as follows:

To prevent undue congestion of population.

To insure better sanitary conditions, providing minimum requirements for light and air.

To simplify the problem of street traffic regulations.

To make possible a sensible and more practical street paving programme for the future.

To render possible great economies in paving city streets through a decrease in the width of roadways, where sizes and number of buildings are limited.

To insure the permanence of character of districts when once established.

To prevent the scattering and intrusion of any inappropriate and destructive uses of buildings which deteriorate and decrease property values.

To stabilize and protect property values and investments.

To protect the maintenance of the home and of home neighborhoods.

To offer a safe district in which industries may be located without protest and with every facility to do business.

Finally, to make Portland a more orderly and convenient place in which to live and to work.

Liability of Architect to Owner on Building Plans

THE question of the liability of the architect to the owner is one which has been threshed out in the courts from time to time but is nevertheless one of recurring litigation because no general rule has ever been laid down by the courts that will cover every specific case. About the only thing that has been universally and finally established is that the architect is human and his work can therefore only approximate perfection, however skillful or learned he may be; hence the owner cannot expect absolute perfection in either plans or specifications. Reviewing opinions of many courts regarding the liability of the architect to the owner a legal authority, writing for the American Contractor, says:

It is a general rule of law that the architect must employ reasonable skill and taste in his work. The term "reasonable" of course, being rather vague, but it is presumed to mean reasonable among his profession.

In a Nebraska case it was held that, as between the architect and the owner, no doubt the architect would be liable for any mistake in the plans and specifications which increased the cost of the building.

In New York it was held that the architect cannot recover anything where defects and omission run through the entire system of his plans, so that they are useless to contractors and builders.

In a Pennsylvania case, the referee took as a basis of ascertaining the value of the services of an architect, their value if they had been skillfully prepared and complete, and deducted from the amount what it would cost to complete the plans and remedy the defects.

This decision was reversed on appeal, the court saying:

"If the plans had simply been incomplete, requiring only the services of an ordinary draughtsman to perfect the details, the basis adopted by the referee would not have been subject to just criticism. When an architect undertakes to prepare the plans for a large and expensive structure, he covenants not only that he is possessed of the requisite skill, but that skill shall be exercised in the work which he has undertaken.

"If the product of his labor is a plan vitally defective, his employer might go on and erect a building enormously expensive which, from its foundation up, would be insecure.

"It is manifest that the value of a plan skillfully drawn furnishes no standard by which to ascertain the value of a plan containing such radical defects. A plan which, if carried into execution, would produce a building not self-supporting, can hardly be said to come up to what is expected of an architect.

"If the plan in question exhibited the skill which the nature of the employment demanded its value was to be estimated accordingly. If it was so defective as not to meet the requirements of the purpose for which it was intended, it might be utterly worthless. If the plaintiff was entitled to recover, the value of his services is to be determined by what he himself did, and not what some more careful man might have done."

In a New York case, the court said:

"It is as necessary that the architect should know what is needed to make steam heating apparatus serviceable as it is that he should know how sewer gas is to be kept out of the house. No one would contend that at this day an architect could shelter himself behind the plumber, and excuse his ignorance of the ordinary appliances for sanitary ventilation by saying that he was not expert in the trade of plumbing.

"He is an expert in carpentry, in cements, in mortar, in the strength of materials, in the art of constructing the walls, the floors, the staircases, the roofs, and is in duty bound to possess reasonable skill and knowledge as to all these things; and when, in the progress of civilization, new conveniences are introduced into our homes, and become, not curious novelties, but the customary means of securing the comfort of the unpretentious citizen, why should not the architect be expected to possess the technical learning respecting them that is exacted of him with respect to the other and older branches of his professional studies?"

It must be kept in mind, however, that the duty of the architect, with reference to a certain engagement, is limited by the contract which he has entered into with the owner. The law cannot impose a liability even as to skill and knowledge, which is not contemplated by the contract. And where certain specifications are set out in the contract, tending to point out the measure of the architect's duty, it will be construed by the courts to mean a reasonable skill in the particulars mentioned and nothing greater.

It is further a general rule of law that an architect is not duty bound to keep secret the plans for a given building, unless he has specifically contracted to do so. But where an architect is engaged to prepare plans for a given building and he, as is generally customary, gives out the fact to the newspapers, he has violated no duty at law which will render him liable in an action of damages, even though the disclosure of the secret may be decidedly injurious to his employer.

It is also true that the architect cannot be held responsible, in an action for damages, for injuries or losses sustained which are the result of the owner's own fault.

For instance, in a given case, the city ordinance prohibited buildings placed nearer the street line than a certain distance. The architect informed the owner of this provision in the ordinances. The owner, however, wanted the building placed on the line and then decided to have it built with windows which projected over, nearer the street than allowed by the ordinance.

The city promptly sued the owner for damages and also obtained an injunction against him, making him tear out the windows and build them in accordance with the statute.

The owner then attempted to recover damages from the architect, but the court disallowed the claim, saying that the architect could never be held responsible for the losses sustained by the owner which were the result of his own fault. The architect had drawn the plans correctly in the first instance and he had warned the owner of the existence of the ordinance. Hence, his hands were clean of the matter.

* * *

Union of Unions to Stimulate Building

To stimulate building 41 unions in New York City have organized and will meet soon in the office of the City and Suburban Homes Company, 624 Madison avenue, to discuss plans for the stabilization of wages and the encouragement of building operations.

At a preliminary meeting 41 unions were represented, all in the building trades except the bricklayers and masons. It was pointed out at the meeting that capital is hesitating in its support of new construction because of the constantly increased wage demands and consideration was given the suggestion of Major Warren Bigelow and Mr. Robert H. Brush, representing the Re-employment Bureau for Soldiers, Sailors, and Marines, that a definite wage scale be fixed.

Following the next conference it is expected a mass meeting will be called so that the proposition can be laid before all the union men.

Present Cost of Building Materials

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, November 20, 1919. All prices f. o. b. San Francisco.

Note.—For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $34.00 per 1000 laid.
Face, $80.00 per 1000 laid.
Common, f. o. b. cars, $15.00.
Face, f. o. b. cars, $47.50.
Terra Cotta Tile Partitions—
12x12x2 in., 18c. per square foot
12x12x3 in., 21c. per square foot.
12x12x4 in., 25c. per square foot.
12x12x6 in., 30c. per square foot.
Hod carriers, $7.00 per day.
Bricklayers, $9.00 per day.

Composition Floors—30c. per sq. ft.

Concrete Work (material at bunkers)—

No. 3 rock	$2.00 per yd.
No. 4 rock	2.10 per yd.
Niles pea gravel	2.10 per yd.
Niles gravel	2.10 per yd.
Niles top gravel	2.00 per yd.
City gravel	1.75 per yd.
River sand	1.25 per yd.
Bank sand	.75 per yd.
Monterey sand	60c. per sack
Cement (F. O. B. cars)	$3.03 per bbl.

Rebate for sacks, 15c. each.

Atlas "White"	$9.50 per bbl.
Medusa cement	9.50 per bbl.
Forms	$60.00 per M

Wage—

Laborers	$6.00 per day
Concrete workers	7.00 per day
Cement finishers	8.00 per day

Dampproofing—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

Electric Wiring—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies.

Excavation—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

Glass—
21 ounce, 25c. per square foot.
Plate, 80c. to $1.25 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
WAGE—Glaziers, $8.00 per day.

Lumber—
Common (at building), $51.00 per 1000.
Flooring—

1x3 No. 1	$95.00 per 1000
1x3 No. 2	87.00 per 1000
1x4 No. 1	88.00 per 1000
1x4 No. 2	85.00 per 1000
1x4 No. 3	78.00 per 1000
1x6 No. 1	93.00 per 1000
1x6 No. 2	90.00 per 1000
1¼x4 and 6 No. 1	93.00 per 1000
1¼x4 and 6 No. 2	88.00 per 1000
Slash grain, 1x4 No. 1	72.00 per 1000

Shingles—

Redwood, No. 1	$1.60 per bdle.
No. 2	1.50 per bdle.
Red cedar	1.85 per bdle.

(Add cartage to above)

Hardwood Lumber—	Per ft.
1" FAS Ash	21c.
1" FAS Birch	18½c.
1" FAS Southern Red Gum	17½c.
1" FAS Jenisero (Genezero)	16½c.
1" FAS Hawaiian Koa	24c.
1" FAS Mahogany	36c.
1" FAS Maple	18c.
1" FAS Plain Oak	22c.
1" FAS Quartered Oak	35c.
1" FAS Walnut	36c.

(Above quotations at yard.)

Hardwood Floors—
Maple floor (laid and finished), 28c. per foot.
Factory grade floors (laid and finished), 24c. per foot.
Oak (quartered, finished), 35c. per foot.
Oak (clear), 30c. per foot.
Oak (select), 28c. per foot.
WAGE—Floor layers, $9.00 per day.

Hardwood Floors (not laid)—

		Per M ft.
13/16x2¼" face	Clear quartered oak	$300.00
	Select quartered oak	230.00
	Clear plain oak	230.00
	Select plain oak	205.00
	Clear maple	150.00
	Clear maple—white	170.00

13/16x3¼" face	Clear maple	150.00
1⅛x2¼" face	Clear maple	155.00
⅜x2" face	Clear quartered oak	230.00
	Select quartered oak	195.00
	Clear plain oak	175.00
	Select plain oak	155.00
	Clear maple	115.00
	Clear beech	105.00
	Clear red beech	112.50

Veneered Panels—

24x60 in., ¼ in., 3-ply, 1 side:	Per ft.
Ash	23½c.
Hungarian Ash	35¼c.
Birch	23½c.
Curly Birch	34¼c.
Elm	21c.
Jenisero (Genezero)	33½c.
Southern Red Gum	27c.
Qtd. Southern Red Gum	34½c.
Hawaiian Koa	34c.
Maple	22c.
Birdseye Maple	41½c.
Mahogany	34½c.
Oregon Pine	15c.
Plain Oak	27c.
Quartered Oak	34¼c.
Walnut	33½c.

Millwork—
O. P., $120 per 1000. R. W., $120 per 1000.

Labor—
Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
Double hung box frame windows (average) with trim.....$9.50 each
Doors, including trim (single panel) ..... 9.00 each
Doors, including trim (five panel) ..... 7.50 each
Screen doors ..... 4.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchens and pantries, seven feet high, per lineal foot 8.00
Dining room cases same price, if not too elaborate.
Flag poles, per foot..... 1.50
Base, picture mould, moulding, etc. .....$120.00 per M
WAGE—Laborers, $6.00 per day.
Carpenters, $8.00 per day.

Marble—

Columbia	$1.50 sq. ft.
Alaska	1.50 sq. ft.
Tennessee	1.75 sq. ft.
Verde Antique	3.00 sq. ft.

Painting—
Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—$10.00 each.

Plastering—
Interior, on wood lath, 60c to 65c per yard.
Interior, on metal lath, $1.10 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Interior on brick or terra cotta, 50c. per yard.
Exterior, on metal lath, $1.80 per yard.
Wood lath, $8.25 at yard per 1000.
Metal studding, 80c. per yard.
Metal studding, with lath and plaster, $1.90 per yard.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $17.50 per ton, f. o. b. warehouse.
WAGE—Hod carriers, $7.50 per day.
Plasterers, $9.00 per day.

Plumbing—
From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

Reinforcing Steel—
Base price for less than car load lots, $4.35 per 100 lbs.
Car load lots, $3.60 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

Roofing—
Five-ply tar and gravel, $7.00 per square.
Tile, $35.00 per square.
Redwood shingle, $10.00 per square.
Cedar shingle, $11.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

Rough Hardware—
Nails, per keg, $5.75 base.
Deafening felt, $100.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Skylights—
Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

Store Fronts—
Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

Structural Steel—$150.00 per ton.
This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

Tile—
White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

Windows—
Metal, $2.00 a square foot.

A Twenty-Five-Story Bank and Office Building

THERE is every reason to believe that the coming year will witness construction of a monumental bank and office building on the site of the present Crocker building, at the gore of Market, Post and Montgomery streets, San Francisco. If the plans mature it will be the tallest office structure west of Chicago. Preliminary sketches for a twenty-five story tower-like building having 800 offices have been prepared by Messrs. Willis Polk & Company, Hobart building, San Francisco. The estimated cost of the proposed improvements is $5,600,000. The present Crocker building would, of course, be razed. Speaking of the project Mr. Polk said:

"The construction of the new Crocker building at this time, at the top of a period of great unrest—in the face of high wages and high prices—will largely help to restore confidence, tend to stabilize values and otherwise be to the clients' interest. Besides this the working facilities of the bank could be brought to a point of higher desirability, and the whole scheme will be of far reaching benefit to the community in general.

"It would stir the dormant investor, release timid capital and be a spur to enterprise!

"It is evident that our design, inspired by the great Spanish tower, would give a note of emphasis to the site. It would be a landmark in the community, and would be in keeping with the bank's financial eminence in San Francisco. It is not fanciful to assume that an increase of deposits would result.

"It should be noted that in all cities of the United States, especially in San Francisco, adequate banking facilities are essential to the welfare of the bank.

"The design is to be modelled on the lines of la Giralda, of which, through the courtesy of the Spanish government, the Cardinal Archbishop of Seville and don Ricardo Velasquez (chief of the school of architecture of the University of Madrid) we have secured accurate scale and full size drawings, as well as samples of ancient brick and tile, that give that famous work of art its color charm and distinction. Such a building would immediately command world attention."

* * *

Standard Wage of $1 per Hour in Chicago

Following the settlement of the carpenters' strike in Chicago, a new scale of $1 per hour has been agreed upon for the following classes of labor in the Chicago building trades:

Trades	Wage Sept. 20, 1918.
Asbestos workers	$0.76¼
Boilermakers	.80
Bricklayers	.87½
Carpenters	.80
Cement finishers	.80
Drain layers	.68¾
Electricians	.87½
Elevator constructors	.87
Fixture hangers	.81¼
Gasfitters	.84¾
Glaziers	.75
Hoisting engineers	.87½
Ironworkers, ornamental	.80
Ironworkers, structural	.87½
Ironworkers, architectural	.87½
Lathers	.80
Machinery, safe movers and riggers	$0.70
Marble workers	.75
Marble workers, mosaic	.75
Machinists	.85
Plasterers	.87½
Painters	.75
Plumbers	.84¾
Roofers, slate	.80
Roofers, composition	.77½
Roofers, tile	.80
Sprinkler fitters	.80
Sheet metal workers	.75
Steamfitters	.81¼
Stonecutters	.81¼
Tile setters	.81¼
Tuck Pointers	.87½

THE
Architect and Engineer
INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional.

Vol. LIX. NOVEMBER, 1919 No. 2

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Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

FOREST PRODUCTS LABORATORY NEEDS LARGE APPROPRIATION

The government should increase the appropriation of the forest products laboratory, United States Department of Agriculture, which was established nine years ago at Madison, Wisconsin, and has since been doing splendid service. The purpose of the laboratory is to ascertain, by scientific and technical investigations, the various technical properties and possible uses of the different species of wood and to develop for the benefit of the public and the lumber and wood-using industries, the industrial uses to which the various woods may be best adapted.

The laboratory has already done much useful service to wood-using industries, to users of wood products and to the public at large. Tests of strength, toughness, and other physical properties of wood; and of methods of drying; investigation of uses for built-up timbers and plywoods; methods of waterproofing and fire protection; strength tests on types of wooden boxes and other containers; analysis of comparative merits of different species of wood for manufacture into paper, pulp, furniture, implements and miscellaneous products; and investigations in wood preservation, chemical distillation of wood and utilization of by-products are some of the lines of activity in which the laboratory has been engaged.

The laboratory is supported by federal appropriation. During the war its activities were greatly increased and directed almost exclusively to war work. For this purpose its financial support came in large part from the war and navy departments. The immediate emergency having disappeared, support of the laboratory through these special funds has been largely withdrawn.

The appropriation authorized by Congress for the year beginning July 1, 1919, is no greater than the annual pre-war appropriation, viz: $175,260. At least $500,000 is needed to carry on the work. Those en-

gaged in wood-using industries and familiar with the work of the laboratory realize the great value of its activities and the services of almost incalculable value which it is prepared to render to those industries, as well as to the general public. Resolutions have repeatedly been adopted by groups of manufacturers endorsing the work referred to the laboratory and urging the continuance and extension of its activities. But these apparently have not been brought with sufficient force to the attention of congressmen and senators.

The forests constitute one of our greatest national resources. Concerted effort is now on foot looking to preservation of future supplies of timber for the use of wood and wood-using industries. The laboratory can serve the public by making available to the users of wood and wood products the most efficient methods so that there shall be the least possible waste of valuable material.

THE ONE-STORY SCHOOL HOUSE

With the opening of school this fall the shortage of school buildings is everywhere emphasized, for comparatively few of the several hundred thousand new school houses which the department of labor announced in the spring as necessary, have been built.

The one-story school house, no matter of what material built, has at least disposed forever of life peril, with reference to the terrible menace of fire; and when built of wood and stucco, hollow tile or concrete, it cannot be excelled for beauty, low cost and elasticity. Where generous sites are obtainable at a fair price (in congested localities) the one-story school building is considered ideal.

This type of school house has many advantages over other kinds, aside from the greatest one of freedom from fire peril. There are no stairs to climb, no room wasted in halls and stairs, no sweeping of dust from one floor to another, no overhead noise; quicker exits and better light and ventilation are obtainable.

An idea which is widely applied in a standard type of industrial building deserves consideration for one-story school buildings. This is the slow burning or mill construction floor design, in which the interior frame and floors are of timber arranged in heavy solid masses and smooth flat surfaces so as to expose the least number of corners, and to avoid concealed spaces which may not be readily reached in case of fire. This type of construction will not only mean freedom from fire peril, which the one-story structure insures by its very nature, but it will reduce property damage to a minimum while at the same time providing a substantial structure at a low cost, with beauty and adaptability to change or addition.

Notes and Comments

Anent The Santa Barbara Court House Competition

Another architectural competition has come and gone, once again leaving in its wake a question of fairness. It seems the Santa Barbara County Court House judgment which gave Mr. Edgar A. Mathews, a San Francisco architect, first prize, was not the unanimous verdict of the jury, as evidenced by the following letter addressed to the different competitors and signed by Messrs. J. E. Allison and Sylvain Schnaittacher, the two architectural members of the jury:

To the Competitors in the Competition for the Santa Barbara County Court House:

The undersigned having been selected to act as jurors in the competition for the Santa Barbara county court house feel that in justice to themselves and the competitors, that some statement should be made detailing their connection with the judgment and decision of the jury.

As stated in the program the jury was composed of the five members of the board of supervisors, two architects, Sylvain Schnaittacher of San Francisco and J. E. Allison of Los Angeles and one other person to be selected by the board of supervisors. The selection of the eighth mem-

ber as made by the board of supervisors was Mr. C. A. Black, a very public spirited and distinguished citizen of Santa Barbara.

The undersigned met at Santa Barbara on July 7th, the date fixed by the board for the judgment. The usual formality of opening the drawings and preserving the anonymity of the competitors was strictly adhered to under the direction of Mr. J. Corbley Pool, the professional adviser. The drawings were hung in two rooms of the public library building in Santa Barbara. Members of the board of supervisors were called in to view the drawings late on Monday afternoon. It was decided that a full meeting of the jury would be held that evening and Mr. Pool was directed to notify Mr. Black. Meanwhile the professional members of the jury were instructed to go through the drawings and use their judgment as to elimination. The drawings were segregated into two lots. Five sets from which the prize winners were to be selected were placed in one room and the other seven sets, there having been twelve in all, were placed in the second room.

When we met for the evening session, Mr. Pool informed the jury that unfortunately a near relative of Mr. Black had passed away and as he was leaving immediately, would be unable to meet with the jury. After viewing the drawings and considerable discussion as to what should be done under the circumstances, the members of the board stated that they would meet again in the morning and decide what to do.

On Tuesday morning a meeting was held during which the merits of the various designs were discussed, but it was decided that no final selection would be made until Mr. Black's return. The architect members of the jury asked if it were not possible to conclude the business as they were rather reluctant to take the time to return again to Santa Barbara, but the board was firm in its determination to wait until Mr. Black should return, and the undersigned left with the understanding that they would be recalled for the final judgment, the date for which would be fixed on Mr. Black's return, and that meanwhile the drawings and other documents would remain sealed.

It was with considerable surprise that we learned of the judgment without having received any notification of the final meeting. In view of the explanation of the members of the board we feel that there was no intention on the part of the board to disregard the opinion of the professional members of the jury, for according to their statement they felt that from what discussion had taken place, they were in a position to select the drawings and in fact made their choice from those designs which had been set aside.

It is unfortunate that the board through inadvertance, should have taken an action which would appear irregular, but we must accept their statement that it was done in good faith. It should also be mentioned that Mr. Black participated in the final judgment.

Yours very truly,
(Signed) J. E. Allison.
(Signed) Sylvain Schnaittacher.

Lumber Exports vs. Production

Only 4.1 per cent of the total lumber production of the United States was exported in 1918, according to recent government figures which prove how unfounded is the statement reported to have been made by a prominent forester that "our forests are being drained to support foreign factories."

In 1918, the government figures give somewhat more than one billion three hundred million feet of lumber as exported out of an estimated production of 32 billion feet. Of these exports about 110 million feet was in railroad ties, not quite as much in hewn and sawed timber, while over one billion feet was in the form of boards, planks and deals.

Figures for the first three months of 1919 show only a slight increase in value of lumber exports over the monthly figures of the last half of 1918. For April, May and June, 1919, the exports are greater, the increase in value being about 40 per cent over the average value of 1918 months. But even if the entire year of 1919 shows an increase of 40 per cent, which is extremely unlikely—June, 1919, exports of merchandise were the peak and July figures were 30 per cent lower—but even on this extreme supposition, the total lumber exports for 1919 would be less than two billion feet out of a total predicted production of 32,000,000,000 feet or about the equivalent of the 1918 yield.

Authorities further state that a large part of the exported lumber contains knots, contrary to the report that we are sending abroad our best timber. In Europe knots are not generally regarded as a defect, but are sometimes preferred for their decorative effects. In 1918, it is quite possible more high grade lumber was exported than formerly for airplane construction but pa-

trictic critics of exporting would be slow to condemn this use.

It would indeed be poor business policy on the part of this country not to assist western Europe in rebuilding—at least to the extent of sending over four per cent or even six per cent of our production—just as it would have been poor political policy for us not to have helped her win the war, and this, even if we put the whole matter on the low level of policy.

May Hold Competition

The City of Sacramento has voted $3,064,000 for a bond issue for new school buildings. The city board of education is now considering a number of propositions for securing creditable plans for the different schools. The board has consulted with the Sacramento architects, who, very naturally, are anxious to secure the work. The contractors of Sacramento are also anxious that they be given a preference in the award of contracts. Director G. S. Turner is not in favor of excluding out-of-town competition. He is quoted as saying:

"The building of these new schools is open for full and free competition to the world. If Sacramento architects draw better plans for less money, let them have the plans. If Sacramento contractors want the construction of these buildings, let them submit prices which will meet outside competition. I am for the people who pay the bills and not for any particular part of them. If this work is limited to Sacramento builders, they will form a combination which will beat any trust on record."

Architects Have Their Troubles, Too

Editor The Architect and Engineer:—Strikes and high cost of living are not the only troubles the architect has to contend with these days. Good commissions are not easily obtained and even when a job is finally secured it is *not always secure*, as evidenced by the following: A well known firm of San Francisco architects was commissioned to prepare plans for a $60,000 church. The plans were completed and without competition the job was let to a local contractor on percentage. This contractor then had made a model of a church according to his own conception of how the edifice should be built. It was approved by those in authority and is now being built, the design of the architects having been discarded. Is it any wonder architects become discouraged? X. Y. Z.

A Theatre to Seat 4000 Persons

Announcement was made the past month by Messrs. Herman Wobber and Herbert L. Rothchild that they would build a million dollar moving picture theatre to seat 4000 persons on the site of the Prager Department store building at Market and Jones streets, San Francisco. Plans for the structure are being prepared in the office of Mr. Alfred H. Jacobs, 110 Sutter street, San Francisco. It is stated that only a portion of the Prager building will be utilized.

Polish Architect Visits San Francisco

Mr. Ladislas Michalski, city architect of Warsaw, Poland, visited San Francisco recently on a tour of the United States studying public improvements and utilities with a view to embodying the latest in American progress in Warsaw's proposed $100,000,000 municipal development plan.

The distinguished Polander conferred with City Engineer M. M. O'Shaughnessy regarding the Municipal Railway, city roads and kindred subjects. Mr. Michalski says that Warsaw is planning to build a subway and to replace buildings destroyed by the Germans.

$300,000 Bank Addition

Mr. C. E. Gottschalk, who succeeded to the work of the late William Curlett in San Francisco, has been commissioned to prepare plans for a substantial addition to the First National Bank building at Post and Montgomery streets. The new structure will be occupied jointly by the First National Bank and the First Federal Trust Company. It will have an area of 100 by 160 feet and although only two stories and basement, the foundations will be made sufficiently strong to carry ten more stories later on. The improvements will cost $300,000.

15-Story Office Building

Mr. George W. Kelham and Mr. Kenneth MacDonald, architects, have been commissioned to prepare plans for a 15-story class "A" office building to be erected on the site of the old Nevada block at Montgomery and Pine streets, San Francisco, for the Commercial Union Assurance Company of London. The P. J. Walker Company, Monadnock building, will act as advisors and managers of construction. Ground will be broken within 90 days. The building will cost $1,250,000.

Los Angeles Skyscraper

Messrs. Morgan, Walls & Morgan, architects in the Van Nuys building, Los Angeles, are preparing plans for a 13-story class "A" store and office building to be erected on Spring street, between Sixth and Seventh streets, Los Angeles, for Mr. Thomas B. Story. Structure is estimated to cost $750,000 and the ground floor is to be the new home of the Los Angeles Stock Exchange.

Elect New Officers

Oregon State Chapter, American Institute of Architects, Portland, has elected the following officers, the entire personnel of the board being changed: President, Mr. W. C. Knighton; vice-president, Mr. John V. Bennes; secretary, Mr. Folger Johnson; treasurer, Mr. O. R. Bean; trustees, Messrs. Ellis F. Lawrence and Jos. Jacobberger.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Annual Meeting of San Francisco Chapter, A. I. A.

There was a good attendance at the annual meeting of San Francisco Chapter, American Institute of Architects, held October 16th. The following officers were elected: President, Mr. Sylvain Schnaittacher; vice-president, Mr. Arthur Brown, Jr.; secretary, Mr. Morris M. Bruce; directors, Mr. John Reid, Jr., and Mr. William O. Raiguel.

The subject of revision of the building laws was discussed and the Chapter hopes to give this matter the attention it deserves in the near future. An effort will be made to secure the co-operation of Mr. Mark Cohn of the State Immigration and Housing Commission, who is expected to be able to give the Chapter much important data.

Amendments to the by-laws were unanimously adopted. One of the amendments provides for the ending of the fiscal year of the Chapter on September 30th. Annual dues are to be payable in advance October 1st of each year.

The Chapter will be represented by the following committee to co-operate with the General Contractors Association relative to taking bids: Messrs. William Mooser, George W. Kelham, Frederick H. Meyer, Chas. Peter Weeks and Smith O'Brien.

At a meeting of the Chapter September 18th, the sub-committee on competitions reported having sent to the Board of Education of the City of San Rafael a letter relative to a competition for a proposed high school.

Mr. James W. Plachek of Berkeley was elected a Chapter member.

In regard to the submission of bids and the letting of contracts, it was announced that the board of directors had taken the position that any rules adopted for the submission of bids and letting of contracts should be uniform and apply to all contractors, general as well as departmental.

Announcement was made that the Architectural Club's new quarters in the Newman-Magnin building had been completed and a house-warming will be held in the near future.

Three members of the Chapter who had been absent in war service abroad were welcomed back. They were Mr. John Bakewell, Jr., Mr. Ernest Coxhead and Mr. Sidney B. Newsom.

Willis Polk and the California State Board of Architecture

The new members of the California State Board of Architecture for the Northern Division held their first meeting in San Francisco, October 28th, and organized with Mr. Clarence R. Ward president pro tem. Permanent organization will be effected at a joint meeting of the Northern and Southern District Boards to be held in Santa Barbara in December. The first regular meeting of the two boards will be held in April.

One of the first things taken up by the Northern District board was the long deferred matter of Mr. Willis Polk. The secretary was instructed to write Mr. Polk as follows:

Northern District
California State Board of Architecture
1039-1040 Phelan Bldg.
San Francisco, California

October 29th, 1919.

Mr. Willis Polk,
Hobart Building,
San Francisco.

Dear Sir:

Your letter of July 15th in which you state that you have no further use for a license was read at the first meeting of the new board held on October 28th.

The board interprets your letter as a request for the cancellation of your certificate to practice architecture. Unless advised to the contrary this action will be taken at the next meeting.

Yours very truly,
SYLVAIN SCHNAITTACHER,
Secretary.

Mr. Polk replied as follows:

WILLIS POLK & CO.
Building Construction

October 30th, 1919.

California State Board of Architecture,
1039 Phelan Building,
San Francisco.

Gentlemen:

Your valued favor of the 29th inst. received.

We cannot understand by what method of reasoning your board puts an interpretation on our letter to you of July 15th, and construes same as a request for cancelation of Mr. Polk's certificate to practice architecture.

Mr. Polk intends to practice music, public speaking, dancing, building, and various other vocations and amusements as the whim or mood may dictate. Incidently it would be very difficult

to prevent him practicing architecture. We merely advise that we are a construction company that undertakes to build buildings from their inception to their completion, including architectural design, structural and mechanical engineering and construction; the only difference between our method of practice and our system of doing business and that followed by other construction companies is, that, in addition to usual construction service, we also design and plan the buildings as well as build them. However, having no disposition to be in disagreement with the State Board of Architecture, we will refer your letter of the 29th inst. to counsel for advice.

Yours very truly,
WILLIS POLK & CO.

The board will discuss the Polk matter further at its next meeting.

Byron Hot Springs Improvements

Byron Hot Springs have been taken over by Mr. John Tait and Mr. Meyer Lowenthal, who contemplate the following improvements on the premises, some of which will not be carried forward immediately, however:

A forty (40) room frame hotel building.
Remodeling of the swimming baths and salt water baths.
Refurnishing and redecorating of a part of the main building.
A paved and covered esplanade on the east side.
New quarters and dining room for the help.
Remodeling of several cottages.
Construction of a club house and the laying out of a nine-hole golf links, as well as improvement of the garden.
Garage to accommodate 20 machines.

Messrs. Ward and Blohme of San Francisco are the architects.

Berkeley School Work

Construction of Berkeley's new school buildings is progressing very satisfactorily. Additions to four structures are under way and one new building—for the Thousand Oaks district—designed by Mr. W. C. Hays, supervising architect of all the work, is under way. Plans are being completed in Mr. Hays' office for the administration and academic building of the new high school group and the drawings will be ready for contractors to figure in December. Mr. Hays has asked Mr. W. H. Ratcliff, Jr., Berkeley architect, to design the new Lincoln school, at a cost of $150,000, and Mr. Henry H. Gutterson, 278 Post street, San Francisco, to design the new Le Conte school, at a cost of $40,000. Both of these architects will receive a commission of 6 per cent on the work.

Concrete Factory

Mr. John Parkinson, architect in the Title Insurance building, Los Angeles, is preparing plans for a six-story reinforced concrete factory to be erected on the northwest corner of Figueroa and Eighth streets, Los Angeles, for the Brownstein-Louis Company, at an approximate cost of $500,000.

Personal

Mr. Ellis W. Taylor, C. E., has returned to Los Angeles after service in the U. S. navy for the past two and one-half years. At the time of his resignation Mr. Taylor was commander of submarine F-3 at San Pedro. He is now associated with his brother, Mr. Edward C. Taylor, architect with offices at 607 Merritt building.

Messrs. F. D. Hudson and W. A. Munsell announce the dissolution of the firm of Hudson & Munsell, architects. Mr. Hudson's address will be 416 Stimson building, and Mr. Munsell's address 414 Stimson building, Los Angeles.

Mr. J. E. Stanton, formerly with Mr. R. A. Herold, architect of Sacramento, and later with Mr. Lewis P. Hobart of San Francisco, and Mr. Ralph Wyckoff of Salinas, is now with Messrs. D. H. Burnham & Company, Chicago.

Messrs. John P. Krempel and Walter E. Erkes, architect and engineer, have moved their offices from the Henne building to suite 538-539 Bradbury building, Los Angeles.

Mr. John Von Ahnden, formerly with Messrs. Bakewell & Brown, is now with Mr. Henry H. Meyers, Kohl building, San Francisco.

Mr. Ross G. Montgomery and Mr. A. S. Nibecker have formed a partnership with offices in the Story building, Los Angeles.

Mr. Geo. W. Kelham, architect of San Francisco, has returned from a month's stay in the East.

Mr. Henry Shermund has moved from the Mills building to his residence, 1001 Lincoln Way, San Francisco.

Mr. A. H. Markwart, C. E., has moved from the First National Bank building, San Francisco, to 424 Holbrook building.

Mr. Robert D. Farquhar has again opened offices in Los Angeles at 426-7 Security building.

In New Offices

Mr. Myron Hunt, architect of Los Angeles, has fitted up new offices for himself on the eleventh floor of the Hibernian building in that city. They occupy the entire north wing of the building and two offices on the Spring street side, making a total of about 14 rooms, including a reception room, private offices for Mr. Hunt and his chief assistants, consultation rooms, clerical office, library, engineering offices, large drafting room and storage rooms.

Concrete Railroad Tunnel

Mr. Pierre Zucco, structural engineer in the Whittell building, San Francisco, has prepared plans for concreting the tunnel of the Oakland-Antioch railroad in the Berkeley Hills, Alameda county. The tunnel is 3000 feet long. It is estimated the work will cost $80,000.

Washington State Board

Mr. Louis Baeder, Seattle, has been elected chairman and Mr. A. J. Russel, Tacoma, secretary-treasurer of the Washington State Board of Architect Examiners, created by the last legislature and appointed by the governor. The board is now organized and ready to operate under the act. Mr. A. Warren Gould of Seattle is the third member of the board.

The act provides for the registration of architects, regulates the use of the title of architect and provides reciprocal arrangements between states.

The examination prescribed includes special reference to the design and construction of and a test of knowledge of the candidate of the strength of materials and of his or her ability to make practical application of such knowledge in the ordinary professional work of an architect, as well as in the duties of a supervisor of mechanical work of buildings, together with the laws of sanitation as applied to buildings. In lieu of all examinations the board may accept a diploma of graduation or satisfactory certificate from a recognized architectural school or college; registration or certification as an architect in another state or county where the standard or qualifications are not lower than those required by the Washington state board of examiners.

Addition to Lithograph Plant

Mr. Frederick Whitton, manager of construction, 369 Pine street, San Francisco, has plans practically completed for extensive additions to the Schmidt Lithograph Company's plant at Second and Bryant streets, San Francisco. The main building will be of brick and five stories high. There will also be a one-story annex, 80x125, of reinforced concrete, to be used as a pressroom. The total cost of the improvements is estimated at $150,000.

Buildings for Mr. Hearst

Miss Julia Morgan, who designed Mr. Hearst's Examiner building in Los Angeles, and whose offices are in the Merchants Exchange building, San Francisco, is preparing plans for a group of reinforced concrete buildings for Mr. Hearst at San Simeon, near San Luis Obispo. All of the buildings will have terra cotta tile roofs.

Berkeley Warehouse

Plans have been prepared by Mr. James Plachek, architect of Berkeley, for a $75,000 warehouse, 80x90, which will be erected at Ward street and Shattuck avenue in the college town by the Students' Express Company. Construction will be of reinforced concrete.

Have Much Work

One of the busiest architectural firms in San Francisco are Messrs. Bakewell & Brown, with offices at 251 Kearny street. Besides preparing working drawings in conjunction with Messrs. Reid Bros., for the Fitzhugh building, to be erected at Post and Powell streets at a cost of $400,000, they are preparing plans for the D. C. Jackling mansion at Burlingame, which will probably cost $200,000 or more, and they have sketches well advanced for extensive additions to the Children's Hospital at California and Maple streets, San Francisco. The original plans for this hospital were prepared by Messrs. Bliss & Faville. A contract has recently been awarded by Bakewell & Brown for a two-story mill construction warehouse on Howard street, near Spear, for Mr. Orville Pratt, for approximately $40,000. A contract has been let to W. C. Duncan & Company for a country house, costing $20,000 in San Mateo county, and plans are being prepared for a $50,000 country home at Palo Alto for Mr. J. Henry Meyer.

Has Eastern Commission

Mr. H. J. Brunnier, consulting engineer in the Sharon building, San Francisco, recently returned from Shreveport, Louisiana, having been commissioned to prepare plans for a five-story reinforced concrete printing and lithograph plant for the M. L. Bath Company, Ltd., of that city. Mr. Brunnier has completed drawings for extensions to the plant of the Hammond Lumber Company, and for a $75,000 industrial enterprise at Eureka, Humboldt county.

Bank Alterations

Mr. Smith O'Brien, architect in the Bankers Investment building, San Francisco, has prepared plans for an extension to the trust department of the Humboldt Savings Bank, together with additions to the main banking floor. The improvements will consist of considerable bronze and marble work, ornamental plaster, elevator, etc.

Capitol Extension Buildings

Working drawings for the Capitol Extension buildings at Sacramento are being completed by Messrs. Weeks & Day, architects in the Phelan building, San Francisco. It is hoped to advertise for bids for some of the work the latter part of December or early in January. There will be available for the two buildings a sum in excess of $3,300,000.

Store Building

Mr. Mathew O'Brien, Foxcroft building, San Francisco, has completed plans for a one-story class "C" brick store building, 82-6x137-6, to be erected at Golden Gate avenue and Larkin street, San Francisco.

Bungalow Courts

The Pasadena housing committee is giving attention to the building of bungalow courts as an effective means of relieving the acute shortage of houses in that city. There are eleven bungalow courts in Pasadena, all of which are said to be paying investments. Drawings for a typical bungalow court have been prepared by Messrs. Marston & Van Pelt of Pasadena, for the use of the committee in its campaign to stimulate this type of investment building. The committee is securing a list of suitable tracts available for bungalow courts. Houses can be built in these courts at $1200 to $1800 each, it is claimed, on the basis of present prices.

To Have Big Los Angeles Plant

Joseph Musto Sons-Keenan Company, well known San Francisco marble dealers, have purchased the plant of the Woodstone Marble & Tile Company, Twenty-sixth and Soto streets, Los Angeles, and will remodel the buildings and make extensive improvements. Marble blocks will be brought direct from the quarry and will be sawed at the factory. The site comprises about five acres and the plant with improvements will represent an investment of about $150,000. A down town office will be maintained in Los Angeles.

Six Auto Buildings Planned

Mr. Don Lee, distributor in California for the Cadillac, recently returned from a visit to the factory in Detroit and announced that his company had authorized him to contract for the construction of six factory branches and sales buildings in the following California cities: San Francisco, Oakland, Sacramento, Los Angeles, Fresno and Pasadena. It has not been announced who will be the architect or architects of all of these buildings.

Concrete Building

Mr. E. L. Mayberry, 468 Pacific Electric building, Los Angeles, is preparing plans for a two-story and basement reinforced concrete wholesale building to be erected at El Centro for the Channel Commercial Company of Los Angeles. It will contain offices for the officials, rest rooms, salesmen's club rooms with shower baths, and warehouse space.

Hospital Unit

Mr. William Mooser, architect in the Nevada Bank building, San Francisco, is preparing plans for a third unit to the county hospital at Nevada City. It will cost $60,000 and bids will be called for in January.

Bonds Voted for New Schools

The City of Oakland has voted favorably on a $3,500,000 bond issue for new school buildings. The Board of Education is expected to announce shortly the architect or architects who will be in charge of the school programme. Under a previous bond issue Mr. J. J. Donovan was in charge of the work.

Bonds amounting to $500,000 were also voted the past month for a new high school at Chico. Plans are being prepared by Messrs. Woollett & Lamb, Physicians building, Sacramento. Bonds for $150,000 were carried at Bishop, Inyo county, and plans for a high school building there are being drawn by Mr. William H. Weeks, architect of San Francisco.

Alter Residence Into Apartments

Mr. Walter King, architect in the Call-Post building, San Francisco, has prepared plans for alterations and additions to a large residence at Minor avenue and Stanislaus street, Stockton, for Mr. W. E. Tretheway. An additional story will be added and there will be twenty-four apartments of two and three rooms to an apartment. The improvements will cost $25,000. Mr. King has also made plans and has awarded a contract for a $50,000 hotel in Stockton.

Taking Bids for Oakland Hospital

The supervisors of Alameda county are advertising for bids for the general construction of the first unit of the proposed new county hospital group, from plans by Mr. Henry H. Meyers, architect, Kohl building, San Francisco. The work now being figured includes a service building and two dormitories with connecting corridors, all to be of reinforced concrete. The estimated cost is $400,000.

Two Berkeley Residences

Mr. W. H. Ratcliff, Jr., First National Bank building, Berkeley, has completed plans for a $12,000 half-timber and brick veneer bungalow to be built on Piedmont avenue, near Durant street, Berkeley, for Mr. Frank W. Woodward of Oakland. Plans have also been made by the same architect for a two-story Colonial residence for Mr. Arthur G. Wood of 2211½ Grove street, Berkeley.

To Build Ninety Cottages

Plans are being prepared by Mr. A. H. Knoll, Hearst building, San Francisco, for 90 one-story, six-room cottages to be built in Haven's Court, East Oakland, for Mr. Louis Steckler, at a cost of $3300 each. George W. Boxton & Son are the contractors.

Two Branch Libraries

Mr. G. A. Lansburgh, architect in the Gunst building, San Francisco, has completed plans for two branch Carnegie library buildings to be built in San Francisco at a total cost of approximately $100,000. One will be known as the North Beach branch and will be erected on Powell street, between Washington and Jackson streets, and the other will be the Presidio branch, and will be built on Sacramento street, between Baker and Lyon streets. Both structures will be of brick and terra cotta.

School and Residence Work

Mr. Ralph Wyckoff, 328½ Main street, Salinas, is completing drawings for the new $150,000 high school at Salinas, bids for the construction of which will be called for early in the new year. The same architect has completed plans for a reinforced concrete manual training building for the Monterey Union High School and for a $12,000, two-story frame and plaster residence to be built at Salinas for Mr. C. M. Hansen.

Architect Schwartz Busy

Mr. Mel I. Schwartz of San Francisco has completed plans for a one-story brick machine shop to be built on Post street, east of Hyde, San Francisco, at an estimated cost of $17,000; also for a one-story and basement reinforced concrete garage to cost $45,000. Contracts have been awarded by the same architect for a one-story class "C" brick store building at Post and Leavenworth streets.

Addition to Fresno Hospital

Mr. R. F. Felchin, Bank of Italy building, Fresno, has been commissioned to prepare plans and take charge of construction of a two-story addition to the Burnett Sanitarium in Fresno. It will be used as a nurses' home and will cost $60,000.

San Jose Cold Storage Plant

Mr. James T. Ludlow, C. E., 604 Mission street, San Francisco, has prepared plans for a $300,000 reinforced concrete cold storage plant and warehouse to be built in San Jose for the Security Warehouse and Distributing Company.

Santa Barbara Schools

A bond election to vote $440,000 at Santa Barbara for new schools has been authorized. No architects have been selected as yet.

Resigns Membership

Mr. Edgar A. Mathews has resigned his membership in San Francisco Chapter, A. I. A.

Good Architecture in Los Angeles

About a year ago the members of Oregon Chapter, American Institute of Architects, helped to make possible an interesting project that had for its goal naming the best examples of architecture, sculpture and landscape architecture in the city of Portland. The report of the jury was published in full in The Architect and Engineer and the presentation provoked world-wide interest, calls for copies of the magazine coming from all parts of the United States and abroad.

Los Angeles is now to the fore with a movement for a similar project. At a meeting of the Institute Chapter, Mr. A. F. Rosenheim pointed out that one of the chief attractions for visitors in any city was the most notable examples of good architecture and in few instances were any of the citizens of a city or even the Chamber of Commerce or any other civic body in a position to furnish information in regard to the best examples of good architecture. Mr. Rosenheim suggested that a program be inaugurated to secure a non-resident committee of competent persons to judge the buildings of the city and select the best examples of architectural merit. The suggestion was adopted and President Patterson appointed Messrs. Rosenheim, D. C. Allison and Alfred W. Rea as a committee to formulate the details of the program and report at the next meeting.

Will Design San Francisco Schools

The following San Francisco architects have been selected to design new school buildings for the city and county of San Francisco, on recommendation of City Architect John Reid, Jr.:

Adams School—Mr. Morris M. Bruce, Flood building.

McKinley School—Mr. Chas. Sumner, 57 Post street.

Spring Valley School—Mr. August G. Headman, Call-Post building.

Bernal Heights School—Mr. Martin A. Sheldon, 110 Sutter street.

Hancock School—Messrs. Ward & Blohme, 454 California street.

Columbus School—Mr. Herman Barth, Phelan building.

Edison School—Mr. Walter O'Brien, 240 Montgomery street.

The Mission and Grant Schools will be designed by Mr. Reid.

$170,000 Church and School

Messrs. Shea and Minton, 244 Kearny street, San Francisco, are preparing working drawings for a church and parochial school for St. Joseph's Parish of Alameda. Both buildings will be in the Mission type and will represent an outlay of $170,000. The church will replace the one recently destroyed by fire. Plans will be completed in about a month.

With the Engineers

Reports from the Various Pacific Coast Societies, Personal Mention, Etc.

The Engineer and Public Affairs

By HOWARD C. PARMELEE, C. E.

WE have sometimes heard it said of an individual that "he may be a good engineer, but he is no business man." I resent the implied difference. An engineer is a manager, one who carries a project to conclusion in an efficient manner. I might consent to such a statement as "he is a good mathematician, but no business man," or "he is a good surveyor, or assayer, but no business man," but I must contend that if he is a good engineer, he will be a business man. The war has brought out few more striking incidents of management than the direction of the commission for relief in Belgium by Mr. Herbert C. Hoover, an engineer of technical achievement in his profession.

The engineer is entitled to recognition not only as a producer but as a director of policy. Hitherto he has accepted the responsibilities of operation and production, while the control of the enterprise was in the hands of a banker or merchant. Under these conditions, the work of the engineer might be ever so efficient, and yet the enterprise might fail through ignorant management in the executive or selling department. Complete control on the part of the engineer might avoid such a catastrophe and relieve himself, as well as his associates, of inevitable embarrassment. I think that engineers are coming to demand this form of control, being willing to accept responsibility if they are also given authority. Any form of dual control, with the responsibility still resting on the engineer, is intolerable.

The modern engineer can bring to bear on business all of the general essentials to success. Organization is his fort and management his specialty. With him the handling of men and supplies is a matter of scientific procedure and the keeping of accounts and unit costs a prime necessity. Plainly the ability of such a man should not be confined wholly to the details of operation or production, but should be requisitioned on the board of directors or the executive committee.

Perhaps it is more in the realm of government of civic and political activity that the engineer is yet to receive his highest recognition. Certainly it is in this field that he must strive most earnestly for a hearing and for a chance to apply his methods. The strongest traditions are against him, and he is handicapped by a lack of familiarity or intimate relation with political organizations. There is no question, however, that his ability, viewpoint, and methods are sadly needed. Accustomed to considering propositions on their merit, and having an abhorrence of waste and inefficiency, he would be less likely to yield to political expediency in matters of great consequence. I doubt if "pork barrels" would appeal to engineers having ethical standards as high as our statesmen would probably assume for themselves.

There is probably a growing demand for fewer lawyers and more engineers in our civic and political life. There has never been a time in our national history when technical and engineering advice was more needed in matters affecting our industrial growth and welfare. The intricacies of the dyestuff tariff, for example, could not be reckoned with intelligently by lawyers and merchants, nor can the revision of the mining law be sanely undertaken by men who merely own stock in mining companies.

Popular impression prevails that governmental departments are not on an efficient basis, and engineers can render a service to the country by expressing that opinion in a manner so forceful as to show congress the light.

Our legislatures and city councils are no less in need of engineering advice than is congress, while state and municipal affairs generally are subject to abuse and need correction. Town planning and management are engineering problems of first rank, wholly beyond the scope of politics and above the grasp of politicians. Numerous departments of government depend upon technical direction for their successful operation and for the economic handling of funds. In such things engineers should not only take an active part, but should advise those in authority.

Municipal Aquatic Park

Preliminary plans are being made by Mr. M. M. O'Shaughnessy, city engineer of San Francisco, for a municipal aquatic park to include yacht piers, boat houses and bathhouse, and to be built at the foot of Van Ness avenue, San Francisco, at an estimated cost of $250,000.

Compensation of Engineers and Morale of Engineering Organizations

Under a recent date the State and Municipal Section of the Engineering Council's Committee on the Classification and Compensation of Engineers reports that 45 responses have already been received to its questionnaires sent out a few weeks ago. The following notes are supplied by the chairman of the committee, Mr. Arthur S. Tuttle, M. Am. Soc. C. E., and deputy chief engineer, Board of Estimate and Apportionment of the City of New York.

In the case of eight services the morale is reported to be good, but in most of these it appears that the organization reported is a new one or that radical changes in compensation have recently been effected. In 20 reports no comment is made as to the present morale, while in 17 instances the general conditions are said to be as follows:

"Morale would be improved if adequate salaries were allowed."

"Practically all men are clamoring for more pay, but as our budget was fixed while the country was at war we are unable to secure the additional funds necessary to raise salaries further."

"Impossible to hold first class men at these rates. Morale is generally good."

"All want more money. Dissatisfied on account of low pay."

"Our organization is in a condition of unrest and change owing to small appropriation."

"Loyal enough generally, but dissatisfied with pay, and accept better offers readily. Difficult to fill their places at same rates."

"Excellent, but all employes desire increase in compensation over that already granted. New men cannot be obtained at previous salaries."

"Dissatisfied with present compensation."

"Force depleted. Employes leaving to take positions at greater compensation. Men remaining uneasy and dissatisfied."

"I might say that I thoroughly agree with the men in New York City who demand a flat raise of $500 yearly in all classes of the service."

"There is a decided spirit of unrest and dissatisfaction due to the fact that engineering salaries have not been increased in proportion to the advance in the cost of living, and to salaries and wages paid to non-professional men and skilled labor."

"Rate of pay tends to drive more active and self-reliant younger men out of this service—lowering general average."

"Majority of men feel they are underpaid."

"Lack of consideration for services rendered has discouraged the force."

"A general increase of $150 to $400, effective September 16, 1919, has improved the morale of the force, which was affected both by a general reduction of force and the economic situation."

"Increasing restlessness on the part of the entire force due to lack of proper salary increases to meet growing expenses."

Registration of Professional Engineers

The Oregon State Board of Engineering Examiners is now fully organized and prepared to receive applications for registration of the professional engineers in Oregon, and others who expect to practice engineering in that state. The personnel and officers of the board are as follows:

Mr. F. S. Baillie, Baker, Oregon, mining engineer.

Mr. R. R. Bartlett, Astoria, Oregon, civil engineer.

Mr. G. A. Covell, Corvallis, mechanical engineer.

Mr. W. B. Dennis, Carlton, Oregon, mining engineer.

Mr. F. Hesse, Portland, Oregon, mechanical engineer.

Mr. E. G. Hopson, Portland, Oregon, hydraulic engineer.

Mr. O. Laurgaard, Portland, Oregon, civil engineer.

J. H. Lewis, Vale, Oregon, hydraulic engineer.

Mr. F. D. Weber, Portland, Oregon, electrical engineer.

The board has held several meetings to date and has worked out and adopted complete by-laws, rules and regulations for the government of the action of the members of the board and methods for holding examinations.

The following officers have been elected to serve for the next biennium, ending July 1st, 1921:

Mr. O. Laurgaard, city engineer of Portland, president.

Mr. F. D. Weber, electrical engineer for the Oregon Insurance and Rating Bureau, vice-president.

Mr. A. B. Carter, civil and mining engineer, secretary.

Headquarters for the board have been established at 520 Corbett building, Portland, where the necessary application blanks for registration without examination, and copies of the law and all other information may be received at request.

Under the provisions of this law, it will be necessary for all civil, mechanical, electrical, mining, chemical and all branches of professional engineering to register.

The professional engineers who expect to practice after January 1st, 1920, according to the law must be registered, so it is very important that the applications of not only those who expect to be registered without examination, but also those who expect to take the examination should be in before January 1st, 1920.

The Importance of a Correct Definition of Engineering

Mr. Henry Gordon Stott, a past president of the American Institute of Electrical Engineers, is credited with this definition of engineering that is written on the wall of the Engineers' library in New York: "Engineering, the art of organizing and directing men, and controlling the forces and material of nature for the benefit of the human race." The influence of Tredgold's old definition is plainly to be seen in Mr. Stott's definition, for Tredgold defined engineering as "the art of directing the great sources of power in nature for the benefit of the human race." Mr. Stott has added "the directing of men." The superfluous words "for the benefit of the human race" still remain.

Mr. Stott's definition has one fault of Tredgold's definition, namely, failure to specify so precisely as to exclude others than engineers. A farmer, for example, falls within this definition.

Mr. S. E. Lindsay, engineer for the Puget Sound Traction, Light and Power Co., Seattle, has recently proposed the following:

"Engineering is the practice of safe and economic application of the scientific laws governing the forces and materials of nature by means of organization, design and construction, for the general benefit of mankind.

"An engineer is one who is properly qualified to engage in the practice of engineering."

"The writer suggests that the various national and local engineering societies use all reasonable means to have legal recognition given some suitable definition of engineering and engineer. The above are offered for discussion and improvement."

If the clause "for the general benefit of mankind" is eliminated, Mr. Lindsay's definition is quite similar to the one first given in Gillette's Handbook of Cost Data ten years ago, namely, "Engineering is the conscious application of science to the problems of economic production." Mr. Gillette pointed out that since management had become a science it was unnecessary specifically to mention the management of men in defining engineering. In the new Handbook of Mechanical and Electrical Engineering by Gillette and Dana, Mr. Gillette's original definition is slightly changed, and it reads: "Engineering is the systematic application of science to the problems of economic production." It seems preferable to exclude merely an occasional or haphazard application of science, and to specify a systematic application. The word production is obviously used in its broad economic sense, which includes all acts necessary to render a "service" to a "consumer." Mr. Henry George very clearly pointed out, more than 30 years ago, that, in a broad, economic sense, every man who renders a useful service to his fellow man is a producer. For example, he held—and quite correctly—that a teacher is as truly a producer as is a coal miner or a farmer. If, then, we accept this broad definition of production, it is redundant to add the clause "for the benefit of mankind."

In his speech of welcome to Mr. Herbert Hoover, Mr. William L. Saunders said that the Stott definition of engineering "would have been amazing 40 years ago." We go farther and say that it amazed engineers only 10 years ago, and that even now the majority of the older engineers have scarcely recovered from their astonishment.

Ten years ago Engineering and Contracting began the first systematic campaign to persuade engineers that "management engineering" was a new branch of engineering that deserved recognition as such. The proposition was so novel then that the two leading civil engineering periodicals of that day met it with editorial ridicule. It required several years of continuous editorial hammering before Engineering and Contracting was able to use the expression "science of management" without exciting an editorial guffaw from those two periodicals, not to mention others. Gradually, however, it began to be realized that a new and broader engineering era had arrived, one that made the old definitions of engineering obsolete, and one that was eventually destined to bring about great changes in the teaching and practice of engineering.

There is much more than a word quibble in these fights over definitions of terms that relate to great classes of human activities, as those who have been most active in this particular controversy are well aware. A definition is a brief specification. A definition of engineering specifies what human activities are of an engineering nature. Most of the older engineers at first refused to revise the Tredgold definition so as to admit "management engineers," "industrial engineers," "efficiency engineers," "cost analysis engineers," and the like, to the brotherhood of technical engineers. Even yet the requirements for membership in many of the great engineering societies are so worded that, if taken literally, a management engineer could not become a full member without qualifying as a designing or constructing engineer. Thus the old, narrow conception of engineering still survives in the by-laws of engineering societies, even though a modern definition "is written in large letters on the wall of the Engineers' library in New York."

WEST

TRADE S.W. MARK

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DENVER, COLO.

OLD NATIONAL BANK BUILDING
SPOKANE, WASH.

STORY BUILDING
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STANLEY
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"Use Stanley Ball Bearing Butts for Permanence."

Confidence in

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THE men who planned and constructed these buildings used them —

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The Contractor

HIS TRIALS, TRIBULATIONS AND TRIUMPHS

Suggestions for Contractors on Concrete Road Construction

USEFUL suggestions on concrete road building, compiled from long observation and practice in this kind of work, are given by Mr. Clyde E. Learned, Highway Engineer of the U. S. Bureau of Public Roads, in Public Roads, the official publication of the Bureau. The suggestions follow:

Never attempt to build a concrete pavement unless you already have built one or have in your organization at least one good foreman thoroughly acquainted with this type of construction.

Troublesome equipment, especially the principal items such as the mixer and the pump, often will cause delays that are more costly than interest on new equipment. Therefore, in all cases where used equipment is employed, it is advisable to see that all is thoroughly overhauled and put into good running order before starting work. If the job is a large one, especially if isolated from repair shops, it usually will pay to consider carefully the purchase of new mixer and pump.

The cables on the mixer, as well as various parts on the mixer, the pumps, and other machines, are subject to rapid wear. To avoid delays caused by the breakage of such parts, spares should be kept on hand or under order at all times.

Have on hand at all times a list of repair parts and the nearest agencies for each machine.

Careful Overhauling of Equipment Saves Money.—Keep all nuts on the mixer tightened and use plenty of oil and grease. It is money well spent to have the machinist spend ample time in carefully overhauling, cleaning, and adjusting all machines on the job.

Use a well-laid loop in feeding the mixer. By laying a 3 by 6 ft. platform in front of the skip and by properly placing the runways a large skip can be loaded in a surprisingly short time.

In soft ground it will be necessary to provide runways for the wheelbarrow men and for the mixer itself. In fact, it is always better to have runways, but where they are used ample room should be provided at the skip for turning and there should be no drops onto or off of the runways.

Have the material that is distributed on the road ahead of the mixer properly placed, as considerable delay is caused when wheelbarrow men have to wheel materials a long distance.

Place a reliable man in charge of receiving and placing materials and do not depend upon the teamsters or the truck drivers to allocate them properly. Dump wagons and trucks often cut up the subgrade, with the result that more or less material may be lost in the ruts. This loss can be largely eliminated by having a laborer fill any ruts where a load is to be dumped.

Take Care of the Subgrade.—Many contractors do not pay enough attention to the preparation of the subgrade or to taking care of it after it has once been shaped up, with the result that they have costly delays at the mixer and much unnecessary expense in reshaping

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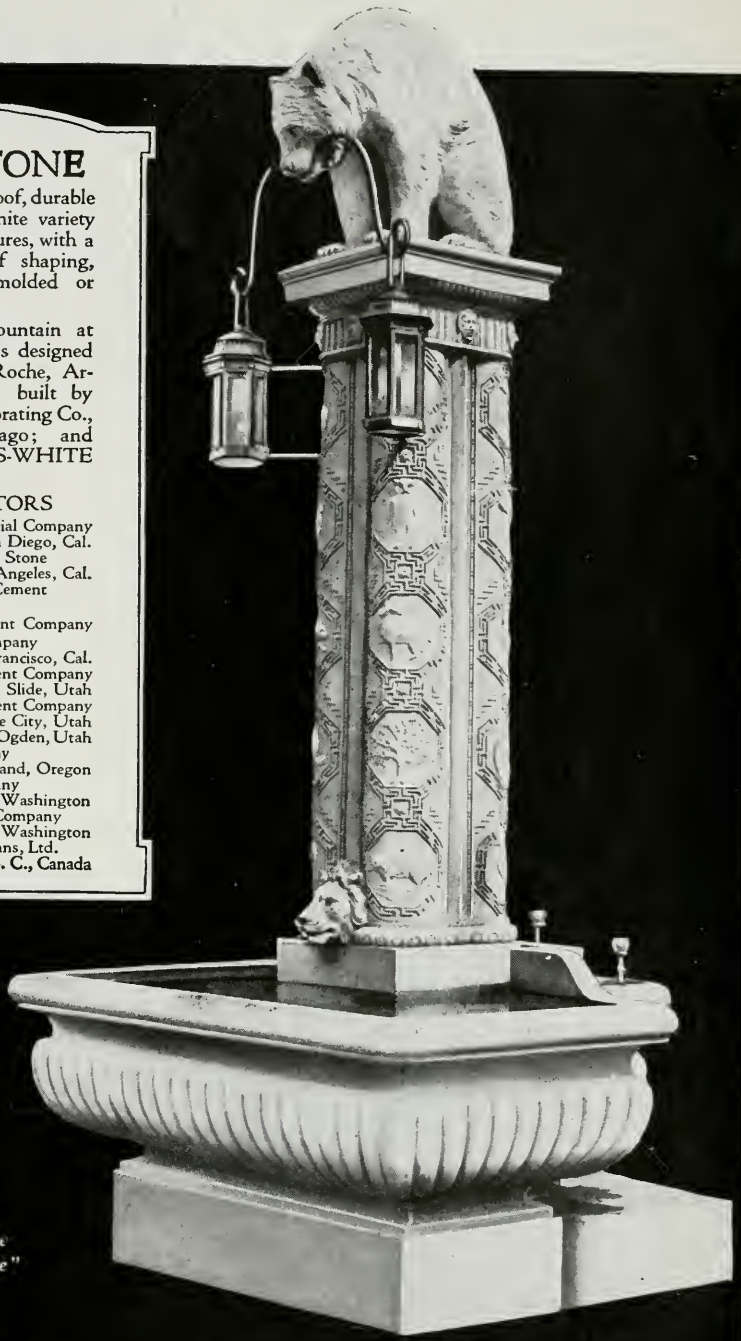

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the subgrade. If enough care is exercised in these particulars it usually is possible to eliminate the one or two men working on the grade ahead of the mixer.

Figure the proper spacing of the loads before cement is piled along the road ahead of the mixer.

Have the cement dumped on the opposite side of the road from the pipe line.

Shake out and tie up cement sacks as they are used. A man will shake enough cement out of the bags to more than pay his wages.

Have the sacks gathered up every night rather than left in piles along the road.

Have boards placed under any cement that is to be left out over night and have enough canvas on hand to cover it in case of rain.

If side forms are to be used, grade the road so that the shoulders will not interfere with placing them.

Where wooden side forms are to be used over and over it will save money to cap them with angle irons.

If motor trucks are used for hauling, it generally will be advisable for them to back in to dump their loads.

Economy in Use of Trucks.—For hauling the materials for a concrete road it is more economical to use trucks with a capacity of from 3½ to 5 tons than trucks of a smaller capacity unless local soil conditions make the operation of such large trucks inadvisable.

A small-capacity truck often proves economical for hauling cement, as it can be driven between the material piles on the road and has comparatively little tendency to damage the subgrade.

Before buying a pump do a little figuring, taking into consideration the size, length, and condition of the pipe line to be used, the maximum vertical height to which water is to be raised, the amount of water that will be required, and the source from which it must be obtained. When the supply is from a deep bored well it will be necessary to provide an extra pump for lifting the water from the well. This should be a deep-well pump connected to an appropriate engine. It is used to pump the water into the storage tank or reservoir from which the high-pressure pump draws the water for the mixer.

Do not use less than a 2-in. pipe line, and discard all defective lengths and rethread all poor ends before laying it.

Water Requirements.—The water requirements will vary from 20 gal. to as much as 60 gal. per minute. This includes water for the concrete mixing, for wetting the subgrade, and one stream for curing the concrete. Usually one stream is not enough to keep the green concrete in good condition, so it will often be nec-

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essary to resort to night pumping to provide enough water for this purpose.

The following tables will be of assistance in determining the size of pump required for most conditions:

TABLE I.

Water required per minute.	Loss in friction head (in feet) in 2-inch pipe. 1 mile.	2 miles.	3 miles.	4 miles.
20 gal.	51	102	153	204
30 gal.	110	220	330	440
40 gal.	194	388	582	776
50 gal.	296	592	888	1,184
60 gal.	468	936	1,404	1,872

To the loss in head in the above table it will be necessary to add the vertical height that the water is to be pumped and to make allowance for angles and valves.

The theoretical horsepower required to raise water to different heights is given in the following table:

TABLE II.

Per minute.	Height to be raised (in feet). 100	200	300	400	500	600
20 gal.	0.50	1.00	1.50	2.00	2.50	3.00
30 gal.	.75	1.50	2.25	3.00	3.75	4.50
40 gal.	1.00	2.50	3.00	4.00	5.00	6.00
50 gal.	1.25	2.50	3.75	5.00	6.25	7.50
60 gal.	1.50	3.00	4.50	6.00	7.50	9.00

Multiply theoretical horsepower by 4 for deliveries of 30 gal. per minute or less and by 3 for deliveries of from 30 to 125 gal. per minute.

EXAMPLE.

Required, 40 gal. per minute; maximum distance to be pumped = 2 miles, up a hill 100 ft. in height.

From Table I:

Loss in head in pipe line	= 388 ft.
Vertical height up hill	= 100 ft.
Estimated loss of head in valves, elbows, etc.	= 20 ft.
Total head	= 508 ft.

From Table II:

Theoretical horsepower required	= 5 HP.
Actual horsepower required for engine and pump, three times theoretical horsepower	=15 HP.

Relief Valves to Prevent Damage.—The vertical distance from the water surface to the pump should not exceed 20 feet, and a foot valve should be placed on the end of the suction pipe. To prevent damage from excessive pressure in the line all pumps should be provided with relief valves.

Provide a 1-inch hose from pipe line to mixer.

At the pump provide a check valve in the main pipe line, and between it and the pump put in a tee with a short nipple, on which a globe valve is set. Open the globe valve before starting the pump, allowing the water to discharge into the air at this point. Close the valve as the engine gets up speed.

Globe valves should be provided in the pipe line about every 1,000 feet apart, 2-inch to 1-inch tees from 200 to 300 feet apart, and unions about 500 feet apart.

The insert for the mixer should be made up as follows: A 1-inch short nipple, a 1-inch globe valve, and another 1-inch short nipple, to which the mixer hose is coupled.

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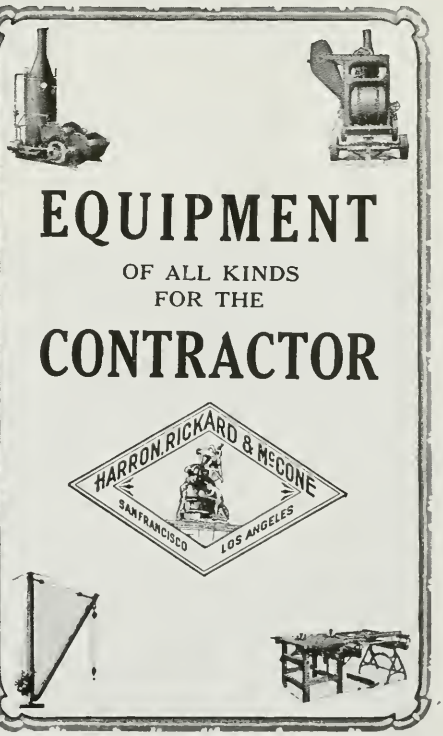

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Fumeless Gas Radiators

WITH the approach of winter and the prospect of higher prices for coal, to say nothing of the possibilities of an actual coal famine, more attention than usual is being given to gas heating appliances. Furthermore, it has been abundantly shown by chemical experts and the Government Fuel Administration during, and since, the war that the most efficient way to eliminate waste in fuel, either coal or crude oil, is to convert it into gas, recovering the immensely valuable by-products for use in our industries. Another waste is the "stack loss." When gas heating appliances are vented to carry off the products of combustion, they incidentally take up the chimney or vent pipe 50% or more of the heat produced, and the cost of operation becomes almost prohibitive. This has been an important factor in the prejudice against gas heating.

At the recent California Home Industries and Land Show, an exhibit of the new models of the Ra-do Fumeless Gas Radiators attracted much attention and were given two first prizes—one for the best gas heating appliances, and one for the best fumeless gas heater. The Ra-do is a California product, invented by a Californian, developed by California capital, and manufactured here by a California corporation, Baird-Bailhache Company.

Speaking of the merits of this radiator, a member of the firm said:

"The principle is simplicity itself, but covered by basic patents which protect it against infringement of its special features. Temperature is maintained by the Ra-do at low expense because of an extremely efficient burner of the atmospheric type, using about 20% gas and 80% air, and by a secondary combustion chamber where the air is reheated, after it has partially cooled by circulating inside the coils of the radiator, and then enters a retort containing a purifying compound, from which it passes into the room. Gas is saved by the principle of super-heating and yet the Ra-do gives more than double the heat of a steam radiator of equal size. It is 100% efficient because there is no loss of heat up a vent-pipe, therefore consuming half the gas of 'vented' gas heating devices.

"To fully appreciate Ra-do radiators, it must be understood that they give two kinds of heat. First is the direct heat, purified by chemical action and coming out as odorless, properly humidified, breathable hot air. This is a large percentage of the total heat, and is all lost through the vent pipe by other gas radiators. Second is the radiated heat from the iron. The burner, being the same in the three sizes made, passes the same amount of direct hot air into the room but the amount of radiated heat is increased by increasing the number of iron sections.

"Architects and builders are coming to see the advantages of a unit heating system, either in new or old buildings, which requires no cutting of floors and walls for flues and takes the place of an expensive central heating plant at about one-third the cost for installation of steam and hot water systems and saving the expense of an engineer."

Mr. Maybeck Lectures

Mr. Bernard R. Maybeck, of Berkeley, architect of the Palace of Fine Arts, (P. P. I. E.), delivered a lecture in the Paul Elder Gallery in San Francisco recently, on "The Cotter's Real—The Ideal." Mr. Maybeck talked on the importance of art in daily life and touched on such subjects as the education of the child in art conception; the ideal that provides what money cannot buy; the Parthenon, etc.

Second Unit to Mausoleum

Mr. T. Patterson Ross, 310 California street, San Francisco, is preparing plans for a second unit to the Forest Lawn Mausoleum near Los Angeles. It will cost $125,000. Mr. Ross is also preparing plans for another community apartment house to cost $200,000, and to be built in the Nob Hill section of San Francisco.

Designing K. of C. Building

Messrs. Jacobberger & Smith, architects in the Board of Trade building, Portland, are completing plans for a four-story steel and mill construction hall building for the Knights of Columbus of Portland, Oregon. The structure will cost $75,000.

Church and Community Center

Mr. Arthur G. Lindley, 904 Wright & Callender building, Los Angeles, has been commissioned to prepare plans for a new church building and community center buildings and game fields for the First Methodist Episcopal church at Taft, California.

The Architects of Stanford University

A letter concerning the architects and architecture at Stanford University has been received from Mr. Charles E. Hodges, formerly resident architect of the university, now residing in New York City. It will be published in the December number of The Architect and Engineer.

Architect on Roosevelt Fund Committee

Mr. Chas. W. Ertz, architect in the Pittock block, Portland, was chairman of the Roosevelt Memorial Fund Committee in that city and had charge of the solicitation of funds from architects and engineers.

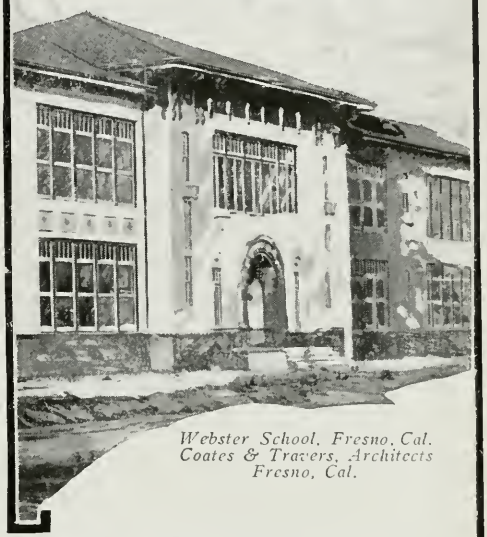
Brick Garage

Mr. Albert C. Martin, 430 Higgins building, Los Angeles, is preparing plans for a one-story brick garage to be erected at Ventura for Mr. R. A. Priest, local Ford agent.

Cash for Back Numbers

The University of California, Division of Landscape Gardening and Floriculture, Berkeley, will pay 50 cents a copy for The Architect and Engineer of January, 1915, and July, 1918. Mail or deliver copies direct to Professor John W. Gregg.

Johns-Manville Asbestos Stucco



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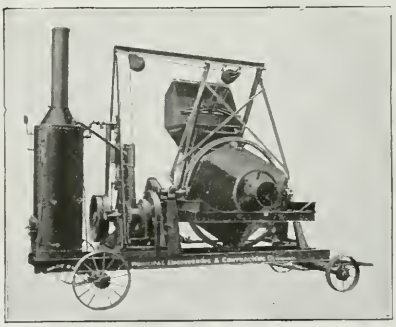

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1919 Efficiency

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Two Stockton Residences

Messrs. Losekann & Clowdsley, architects in the Elks' building, Stockton, have completed plans and awarded contracts for two large residences, one to be built in Stockton, for Mr. A. M. Noble, and the other to be built near Lodi for Mr. W. C. Brown.

Hollow Tile House Competition

Many architects and draftsmen are taking a keen interest in the competition for a hollow tile house to cost not more than $5000 which is being conducted under the auspices of the American Institute of Architects by the Los Angeles Pressed Brick Co. The problem is an interesting one and there promises to be a large list of competitors. The winning designs will be published in The Architect and Engineer.

New Express Packing Rule

It will doubtless be a matter of news to the building trade that the new express packing rules, which go into effect on December 10, will radically change many of the previous regulations for preparing shipments for movement by express. The new requirements have been approved by the United States Railroad Administration, for which the American Railway Express Company acts as agent, in handling the express business of the country.

Among the chief features of the new requirements is the rule which will make it necessary for shippers to use containers of wood or of fibre-board, pulp-board or corrugated straw-board of a specified test strength, for all shipments over 25 pounds. This means that hereafter paper-wrapping will only be permitted for packages up to the 25 pound limit.

Checking Up School Plans

"Checking Schedule for Projected School Buildings" gives a clue to the contents of an interesting pamphlet just issued by the Bruce Publishing Company of Milwaukee. It is intended to be used as a guide in collecting information needed by the architect before sketches and plans can be started, and as a reference in checking up the plans and specifications after they have been completed. It should prove a valuable aid to both the school architect and board of education in planning new construction work. The author is Mr. James O. Betelle who has worked out the material in actual experience as architect and it is said to have been used successfully by a number of school boards and superintendents.

$200,000 Apartment House

Mr. B. G. McDougall, Sheldon building, San Francisco, is preparing working drawings for a seven-story reinforced concrete class B Colonial apartment house for the Kittle Estate. There will be fourteen large apartments. The location of the proposed improvements is Steiner street and Pacific avenue, San Francisco.

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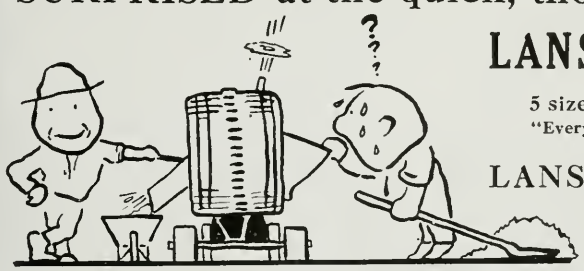

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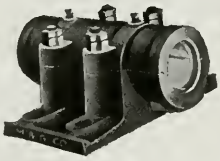

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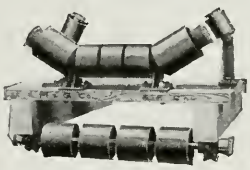

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Mott Company in New Quarters

The Mott Company of California is now permanently located in its new building at 553-555 Mission street, San Francisco. Nearly a year has been consumed by Mr. D. H. Gulick, the local manager, and his associates, in getting settled. The new building, a two-story structure, has been fitted up with the idea of displaying Mott goods to the best possible advantage. No expense has been spared to this end and it is no exaggeration to say the company has one of the most attractive plumbing fixture showrooms on the Pacific Coast. Prior to moving to Mission street, the Mott Company's San Francisco offices were in the Allen building, on Kearny street. Besides showroom and offices the new building affords ample warehouse facilities.

In announcing opening of the new showrooms, Mr. Gulick has sent out the following to architects, owners and the trade in general:

"You are cordially invited to inspect the new showroom wherein will be found a complete and interesting display of modern plumbing fixtures in vitreous china, solid porcelain and enameled iron ware.

"Complete bathrooms have been installed which will give helpful suggestions in the selection of fixtures and tiling and in the general arrangement and planning of bathrooms.

"A complete line of fixtures are carried in stock to facilitate quick deliveries and good service."

The Glidden Company Sales Convention

The Merchant Sales Department of The Glidden Company held their annual convention at the Company's Cleveland plant September 2nd, 3rd, 4th. Representatives from all over the country were present to hear the new sales and advertising plans for 1919-20.

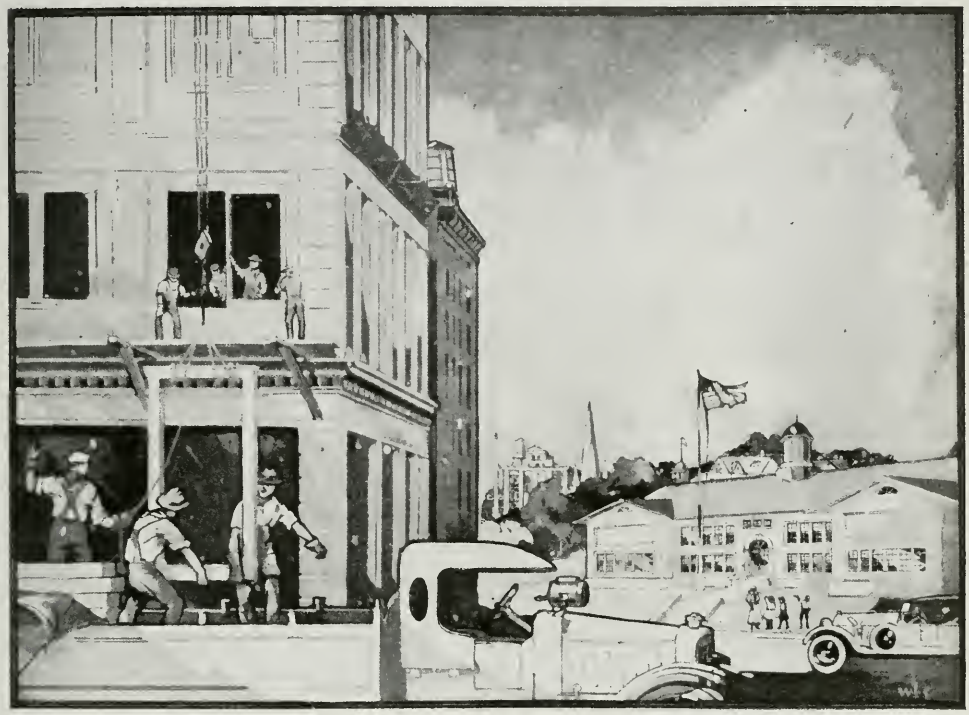
The growth of this concern was well portrayed by the group of salesmen and branch managers in attendance as compared with the convention only a year ago.

The Glidden Company now has seven large factories in the United States and Canada. They include two plants each in Cleveland and Chicago, and plants in Reading, Pa., San Francisco, and Toronto.

In addition to these factories the company is rapidly establishing branch warehouses and sales offices in all principal cities. Every city in the United States of 50,000 population or more will soon have a retail store operated by The Glidden Stores Company, an organization whose purpose it is to distribute the products of The Glidden Company and its subsidiaries.

Next season's advertising and promoting plans were announced by the advertising manager, Mr. L. F. Perrine. The company's new slogan, "Everywhere on Everything," will be featured in all advertisements and window trims.

ARMCO IRON



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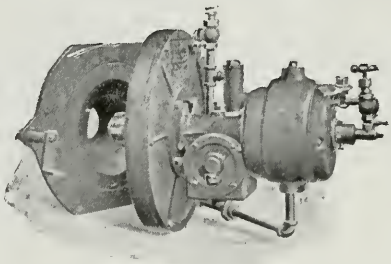

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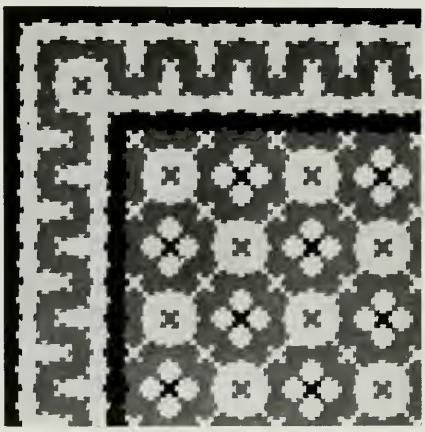

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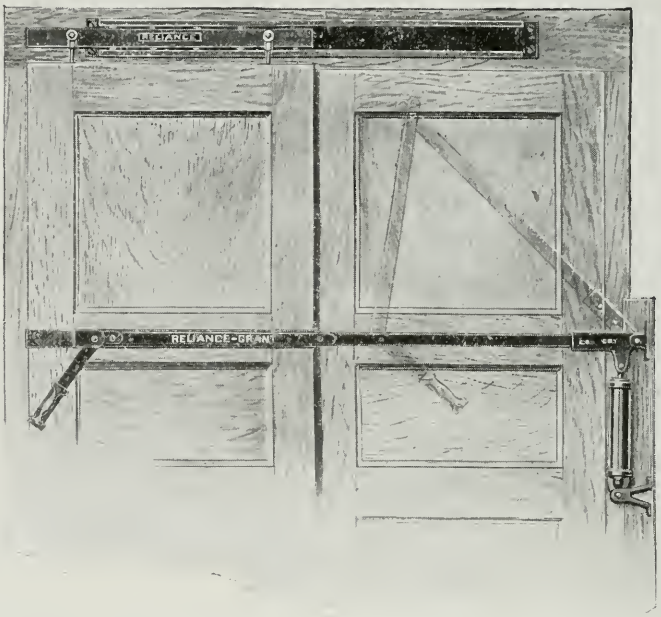

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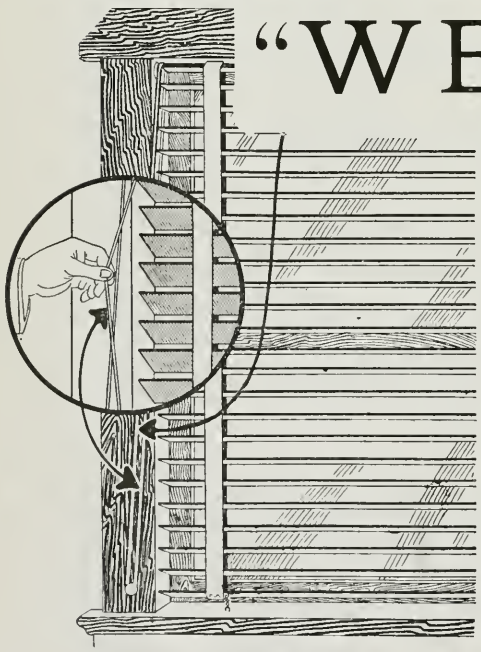

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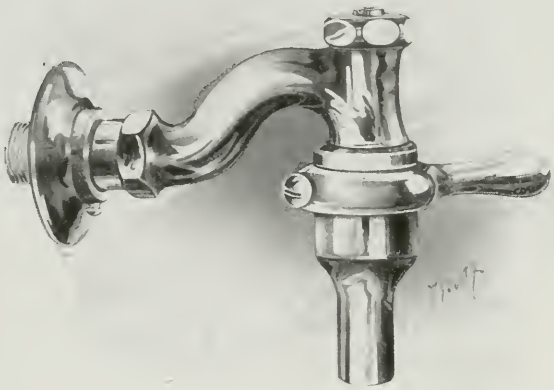

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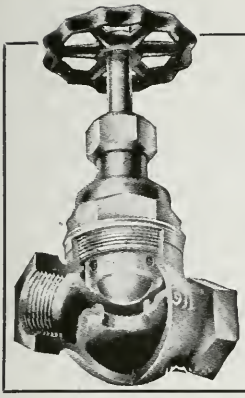

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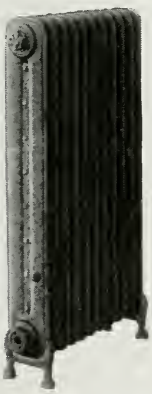

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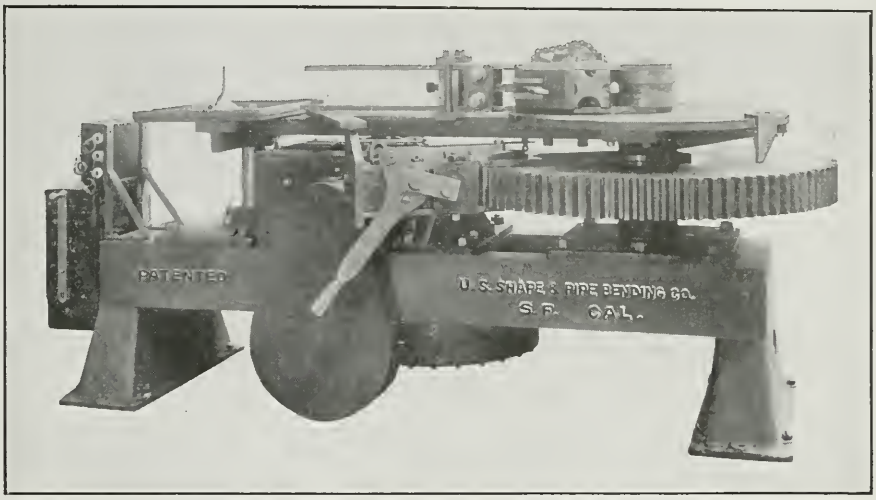

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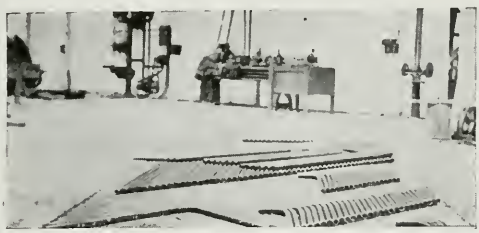

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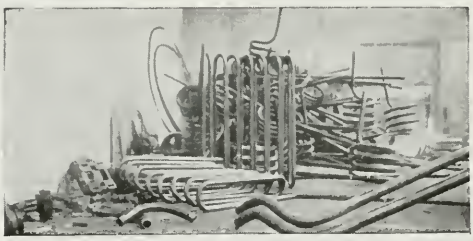

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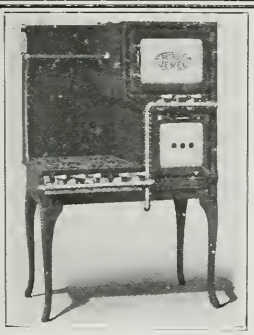

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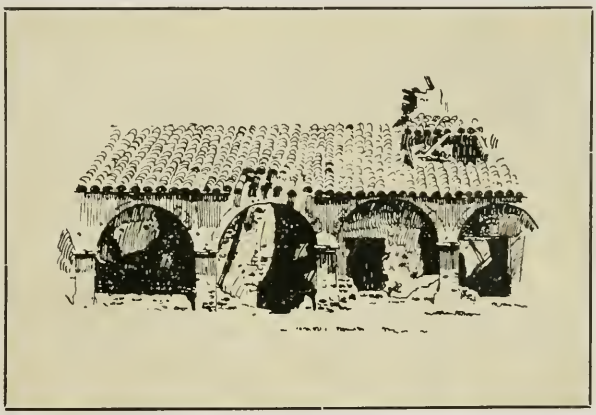

DECEMBER, 1919

PUBLISHED IN SAN FRANCISCO

35c cents per copy · *$2.50 a year*

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By N. W. STERN, Manager
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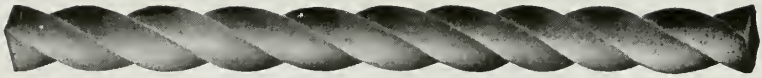

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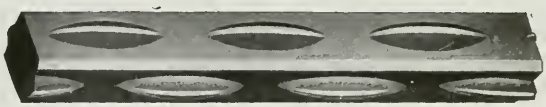

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CLAY PRODUCTS
- W. E. Mushet Co., 502 Mission St., San Francisco.
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- United Materials Co., Crossley Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

COLD STORAGE PLANTS
- T. P. Jarvis Crude Oil Burning Co., 275 Connecticut St., San Francisco.
- Vulcan Iron Works, San Francisco.
- H. W. Johns-Manville Company, 1st and Howard Sts., San Francisco.

COMPRESSED AIR CLEANERS
- United Electric Co., Canton, O., mfr. of Tuec Cleaner, sold by San Francisco Compressed Air Cleaning Co., Sutter and Stockton Sts., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

CONCRETE CONSTRUCTION
- Barrett & Hilp, Sharon Bldg., San Francisco.
- Clinton Construction Co., 140 Townsend street, San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- Palmer & Petersen, Monadnock Bldg., San Francisco.
- Steelform Contracting Company, 681 Market St., San Francisco.

CONCRETE MIXERS
- Austin Improved Cube Mixer. J. H. Hansen & Co., California agents, 508 Balboa Bldg., San Francisco.
- Koehring Mixers, sold by Harron, Rickard & McCone, Townsend St., San Francisco.
- Ransome mixers sold by the Garfield Co., Hearst Bldg., San Francisco.
- Edward R. Bacon Co., 51 Minna St., San Francisco, also Los Angeles.

CONCRETE REINFORCEMENT
- United States Steel Products Co., San Francisco, Los Angeles, Portland and Seattle.
- Twisted Bars. Sold by Gunn, Carle & Co., Inc., 444 Market St., San Francisco.
- Clinton Welded Wire Fabric, L. A. Norris Co., 140 Townsend St., San Francisco.

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Mills Bldg., Bush & Montgomery Sts. San Francisco, Cal.

ARCHITECTS' SPECIFICATION INDEX—*Continued*

CONCRETE REINFORCEMENT (Continued)
- Pacific Coast Steel Company, Rialto Bldg., San Francisco.
- Southern California Iron and Steel Company, Fourth and Mateo Sts., Los Angeles.
- Triangle Mesh Fabric. Sales agents, Pacific Building Materials Co., 525 Market St., San Francisco.
- Steel bars sold by W. S. Wetenhall Co., 450 Irwin St., San Francisco.

CONCRETE SURFACING
- "Concreta." Sold by W. P. Fuller & Co., San Francisco.

CONDUITS
- Garnett, Young & Co., 612 Howard St., San Francisco.

CONTRACTORS, GENERAL
- Barrett & Hilp, Sharon Bldg., San Francisco.
- K. E. Parker Co., Inc., Clunie Bldg., San Francisco.
- R. W. Littlefield, 565 Sixteenth St., Oakland.
- Unit Construction Co., Phelan Bldg., San Francisco.
- Larsen, Sampson & Co., Crocker Bldg., San Francisco.
- J. D. Hannah, 142 Sansome St., San Francisco.
- Chas. Stockholm & Son, Monadnock Bldg., San Francisco.
- A. D. Collman, 110 Jessie St., San Francisco.
- Del Favero & Rasori, 110 Jessie St., San Francisco.
- Clinton Construction Company, 140 Townsend St., San Francisco.
- Monson Bros., 1907 Bryant St., San Francisco.
- W. C. Duncan & Co., 526 Sharon Bldg., San Francisco.
- A. Knowles, Call-Post Bldg., San Francisco.
- T. B. Goodwin, 110 Jessie St., San Francisco.
- Lange & Bergstrom, Sharon Bldg., San Francisco.
- McLeran & Peterson, Hearst Bldg., San Francisco.
- Robert Trost, 26th and Howard Sts., San Francisco.

CONTRACTORS' EQUIPMENT
- Edward R. Bacon Co., 51 Minna St., San Francisco, and Los Angeles.
- Harron, Rickard & McCone. Townsend St., San Francisco.
- Lansing Company, 338 Brannan St., San Francisco.
- Garfield & Co., Hearst Bldg., San Francisco.
- Smith, Booth-Usher Co., 40 Fremont St., San Francisco, and 228 Central Ave., Los Angeles.

CONVEYING MACHINERY
- Meese & Gottfried, San Francisco, Los Angeles, Portland and Seattle.
- P. H. Reardon, 57 First St., San Francisco.

CRUSHED ROCK
- California Building Material Company, Call-Post Bldg., San Francisco.

DAMP-PROOFING COMPOUND
- Armorite Damp Resisting Paint, made by W. P. Fuller & Co., San Francisco.
- Glidden's Liquid Rubber. The Glidden Company, 123 Hooper St., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.
- Imperial Waterproofing, mfrd. by Brooks & Doerr, Reed Baxter, agent, Merchants National Bank Bldg., San Francisco.

DAMP-PROOFING COMPOUND (Continued)
- "Pabco" Damp-Proofing Compound, sold by Paraffine Co., 34 First St., San Francisco.

DOOR HANGERS
- Pitcher Hanger, sold by National Lumber Co., 326 Market St., San Francisco.
- Reliance Hanger, sold by Sartorius Co., San Francisco; D. F. Fryer & Co., B. V. Collins, Los Angeles, and Columbia Wire & Iron Works, Portland, Ore.
- Stanley Works, New Britain, Conn.
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

DRINKING FOUNTAINS
- Haws Sanitary Fountain, 1808 Harmon St., Berkeley, and C. F. Weber & Co., San Francisco and Los Angeles.
- Crane Company, San Francisco, Oakland, and Los Angeles.
- Pacific Porcelain Ware Co., 67 New Montgomery St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.

DUMB WAITERS
- Spencer Elevator Company, 173 Beale St., San Francisco.
- M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL CONTRACTORS
- Butte Electrical Equipment Company, 530 Folsom St., San Francisco.
- Butte Electric & Manufacturing Co., 534 Folsom St., San Francisco.
- Brown-Langlais Electrical Construction Co., 213 Minna St., San Francisco.
- NePage, McKenny Co., 589 Howard St., San Francisco.
- Newbery Electrical Co., 413 Lick Bldg., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Globe Electric Works, 1959 Mission St., San Francisco.
- M. E. Ryan, Redwood City, Calif.
- Rex Electric & Engineering Co., 253 Minna St., San Francisco.
- H. S. Tittle, 766 Folsom St., San Francisco.
- Electrical Construction Company, 2822 Grove St., Oakland.

ELECTRIC PLATE WARMER
- The Prometheus Electric Plate Warmer for residences, clubs, hotels, etc. Sold by M. E. Hammond, Humboldt Bank Bldg., San Francisco.

ELECTRICAL SUPPLIES AND EQUIPMENT
- Sierra Electric Company, 515 Market St., San Francisco.
- Garnett, Young & Co., 612 Howard St., San Francisco.
- Butte Electrical Equipment Co., 530 Folsom St., San Francisco.

D. N. & E. WALTER & CO.

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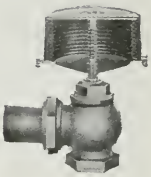

ARCHITECTS' SPECIFICATION INDEX—*Continued*

ELEVATORS
- Otis Elevator Company, Stockton and North Point, San Francisco.
- Spencer Elevator Company, 126 Beale St., San Francisco.

ELEVATOR EQUIPMENT
- Elevator Supplies Company, Inc., 186 Fifth St., San Francisco.

ENGINEERS—CONSULTING, ELECTRICAL, MECHANICAL
- Chas. T. Phillips, Pacific Bldg., San Francisco.
- Hunter & Hudson, Rialto Bldg., San Francisco.
- Hampton Electric & Machinery Co., 518 Mission St., San Francisco.

ELEVATOR DOOR HARDWARE
- Richards-Wilcox Mfg. Co., Underwood Bldg., San Francisco.

FANS AND BLOWERS
- John Ringius, 252 Townsend St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FENCES—WIRE
- Pacific Fence Construction Co., 245 Market St., San Francisco.

FILLING STATION EQUIPMENT
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

FIRE ESCAPES
- Palm Iron & Bridge Works, Sacramento.
- Western Iron Works, 141 Beale St., San Francisco.
- Golden Gate Iron Works, 1541 Howard St., San Francisco.

FIRE SPRINKLERS—AUTOMATIC
- General Fire Extinguisher Company, 453 Mission St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.

FIREPROOFING AND PARTITIONS
- Gladding, McBean & Co., Crocker Bldg., San Francisco.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

FIRE RETARDING PAINT
- The Paraffine Companies, Inc., 34 First St., San Francisco.
- Asbestos Paints. The Glidden Company, 123 Hooper St., San Francisco.

FIXTURES—BANK, OFFICE, STORE, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- The Fink & Schindler Co., 218 13th St., San Francisco.
- Mullen Manufacturing Co., 64 Rausch St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco, and 210 N. Main St., Los Angeles, Cal.

FLOOR TILE
- Mangrum & Otter, 827 Mission St., San Francisco,

FLOOR VARNISH
- Bass-Hueter and San Francisco Pioneer Varnish Works, 816 Mission St., San Francisco.
- Fifteen for Floors, made by W. P. Fuller & Co., San Francisco.
- Standard Varnish Works, Chicago, New York and San Francisco.
- R. N. Nason & Co., San Francisco and Los Angeles.
- The Glidden Company, 123 Hooper St., San Francisco.

FLOORS—HARDWOOD
- Inlaid Floor Company, 600 Alabama St., San Francisco.
- H. N. McNab, 2307 17th Ave., Oakland.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

FLOORS—MASTIC
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

FLUMES
- California Corrugated Culvert Co., West Berkeley, Cal.

FRUIT DRYING MACHINERY
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.

FUEL OIL SYSTEMS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco.

FURNACES—WARM AIR
- Mangrum & Otter, 827 Mission St., San Francisco.
- Montague Range and Furnace Co., 826 Mission St., San Francisco.

FURNITURE—BUILT-IN
- Hoosier Kitchen Cabinet Store, Pacific Bldg., San Francisco.

FURNITURE—SCHOOL, CHURCH, ETC.
- Home Manufacturing Company, 543 Brannan St., San Francisco.
- C. F. Weber & Co., 985 Market St., San Francisco.
- Rucker-Fuller Desk Co., 677 Mission St., San Francisco.

GALVANIZED IRON WORK
- Power & Pike Co., 22-24 Main St., San Francisco.
- James A. Nelson, 509 Sixth St., San Francisco.

GARAGE HARDWARE
- The Stanley Works, New Britain, Conn., represented in San Francisco, Los Angeles, Seattle by John T. Rowntree, Inc.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

GARBAGE CHUTES
- Bradshaw Sanitary Garbage Chute, Bittmann & Battee, 84 Second St., San Francisco, sole agents for California.

GAS STEAM RADIATORS
- Clow Gas Steam Radiators, F. A. Hamilton, Agent Crossley Building, San Francisco.

FUMELESS GAS RADIATORS
- Manufactured and sold by Baird-Bailhache Co., 478 Sutter St., San Francisco.

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ARCHITECTS' SPECIFICATION INDEX—*Continued*

GLASS
- American Window Glass Co., represented by L. H. Butcher Co., 341 Montgomery St., San Francisco.
- W. P. Fuller & Company, all principal Coast cities.

GRADING, WRECKING, ETC.
- Dolan Wrecking & Construction Co., 1607 Market St., San Francisco.
- J. O'Shea, 2100 17th St., San Francisco.

GRANITE
- California Granite Co., Gen. Contractors' Ass'n, San Francisco.
- Raymond Granite Co., Potrero Ave. and Division St., San Francisco.

GRAVEL AND SAND
- California Building Material Co., new Call Bldg., San Francisco.
- Del Monte White Sand, sold by Del Monte Properties Co., Crocker Bldg., San Francisco.

HARDWALL PLASTER
- Henry Cowell Lime & Cement Co., San Francisco.

HARDWARE
- Joost Bros., agents for Russell & Erwin hardware, 1053 Market St., San Francisco.
- Sargent's Hardware, sold by Bennett Bros., 514 Market St., San Francisco.
- The Stanley Works, New Britain, Conn.
- Richards-Wilcox Mfg. Co., Aurora, Ill., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

HARDWOOD LUMBER—FLOORING, ETC.
- Acme Hardwood Floor Company, 1174 Sutter St., San Francisco.
- Inlaid Floor Co., 600 Alabama St., San Francisco.
- Parrott & Co., 320 California St., San Francisco.
- White Bros., cor. Fifth and Brannan Sts., San Francisco.
- Strable Manufacturing Company, First St., near Broadway, Oakland.

HEATERS—AUTOMATIC—GAS
- Pittsburg Water Heater Co., 478 Sutter St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
- Ra-Do Fumeless Gas Heater, sold by Baird-Bailhache Company, 478 Sutter St., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC.
- Gilley-Schmid Company, 198 Otis St., San Francisco.
- A. Lettich, 365 Fell St., San Francisco.
- Mangrum & Otter, 827-831 Mission St., San Francisco.
- James & Drucker, 450 Hayes St., San Francisco.
- James A. Nelson, 509 Sixth St., San Francisco.
- Ideal Heating & Engineering Co., 192 Erie St., San Francisco.
- Illinois Engineering Co., 563 Pacific Bldg., San Francisco.

HEATING AND VENTILATING MATERIAL, ETC. (Continued)
- William F. Wilson Co., 328 Mason St., San Francisco.
- Pacific Fire Extinguisher Co., 424 Howard St., San Francisco.
- Scott Company, 243 Minna St., San Francisco.
- John Ringius, 252 Townsend St. (bet. Third and Fourth), San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOLLOW TILE BLOCKS
- Gladding, McBean & Co., San Francisco, Los Angeles, Oakland and Sacramento.
- Los Angeles Pressed Brick Co., Frost Bldg., Los Angeles.

HOSE—GARDEN, FIRE, ETC.
- Ralphs-Pugh Company, 530 Howard St., San Francisco.

HOSPITAL FIXTURES
- Mott Company of California, 553 Mission St., San Francisco.
- George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

HOSPITAL SIGNAL SYSTEM
- Holtzer-Cabot system, represented by Bittmann & Battee, 84 Second St., San Francisco.
- Chicago Signal Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.

ICE MAKING MACHINES
- Vulcan Iron Works, San Francisco.
- Johns-Manville Company, San Francisco, Los Angeles, and Portland, Oregon.

INGOT IRON
- "Armco" brand, manufactured by American Rolling Mill Company, Middletown, Ohio, and Monadnock Bldg., San Francisco.

INSPECTIONS AND TESTS
- Robert W. Hunt & Co., 251 Kearny St., San Francisco.

INTERIOR DECORATORS
- Beach-Robinson Co., 239 Geary St., San Francisco.
- Sonnenschein Bros., 470 Sutter St., San Francisco.
- F. A. Taylor & Co., 251 Post St., San Francisco.
- The Tormey Co., 1042 Larkin St., San Francisco.

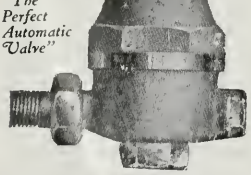
KITCHEN CABINETS
- Hoosier Kitchen Cabinet Store (O. K. Brown, Mgr.), Pacific Bldg., San Francisco.

KITCHEN EQUIPMENT
- James A. Nelson, 509-11 Sixth street, San Francisco.

LAMP POSTS, ELECTROLIERS, ETC.
- J. L. Mott Iron Works, 553 Mission St., San Francisco.

LANDSCAPE ARCHITECTS
- Neil T. Childs Co., 68 Post St., San Francisco.

LANDSCAPE GARDENERS
- MacRorie-McLaren Co., 141 Powell St., San Francisco.



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ARCHITECTS' SPECIFICATION INDEX—*Continued*

LATHING MATERIAL
- Pacific Building Materials Co., 525 Market St., San Francisco.
- Key-Hold Plaster Lath Co., Monadnock Bldg., San Francisco.
- Truscon Steel Co., Tenth St., near Bryant, San Francisco.

LIGHT, HEAT AND POWER
- Great Western Power Company, Stockton St., near Sutter, San Francisco.

LIGHTING FIXTURES
- Roberts Mfg Co., 663 Mission St., San Francisco.

LIME
- Henry Cowell Lime & Cement Co., 2 Market St., San Francisco.

LINOLEUM
- D. N. & E. Walter & Co., 562 Mission St., San Francisco.
- The Paraffine Companies, factory in Oakland; office, 34 First St., near Market, San Francisco.

LOCKERS—STEEL
- George H. Trask, Sacramento St., San Francisco, representing Durand Steel Lockers.

LUBRICATING OIL STORAGE TANKS AND PUMPS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.

LUMBER
- California Redwood Association, 216 Pine St., San Francisco.
- Dudfield Lumber Co., Palo Alto, Cal.
- Hart-Wood Lumber Co., Fifth and Berry Sts., San Francisco.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- Pope & Talbot, foot of Third St., San Francisco.
- Portland Lumber Co., 16 California St., San Francisco.
- Sunset Lumber Company, First and Oak Sts., San Francisco.
- Strable Manufacturing Company, 511 First St., Oakland.

MAIL CHUTES
- American Mailing Device Corp., represented on Pacific Coast by Waterhouse-Wilcox Co., 523 Market St., San Francisco.

MANTELS
- Mangrum & Otter, 827-831 Mission St., San Francisco.

MANUAL TRAINING EQUIPMENT
- Richards-Wilcox Mfg. Co., Ewing-Lewis Co., 626 Underwood Bldg., San Francisco.

MARBLE
- American Marble and Mosaic Co., 25 Columbus Square, San Francisco.
- Joseph Musto Sons, Keenan Co., 535 N. Point St., San Francisco.
- Vermont Marble Co., Coast branches, San Francisco, Portland and Tacoma.

METAL DOORS AND WINDOWS
- Waterhouse-Wilcox Co., Inc., 523 Market St., San Francisco.
- U. S. Metal Products Co., 555 Tenth St., San Francisco.

MILL WORK
- Dudfield Lumber Co., Palo Alto, Cal.
- Pacific Manufacturing Company, San Francisco, Oakland and Santa Clara.
- National Mill and Lumber Co., San Francisco and Oakland.
- The Fink & Schindler Co., 218 13th St., San Francisco.

OIL BURNERS
- American Standard Oil Burner Company, Berkeley.
- Fess System Co., 220 Natoma St., San Francisco.
- S. T. Johnson Co., 1337 Mission St., San Francisco.
- T. P. Jarvis Manufacturing Co., 275 Connecticut St., San Francisco.
- W. S. Ray Mfg. Co., 29 Spear St., San Francisco.
- G. E. Witt Co., 862 Howard St., San Francisco.

OIL STORAGE AND DISTRIBUTING STATIONS
- S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
- Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.

ORNAMENTAL IRON AND BRONZE
- California Artistic Metal and Wire Co., 349 Seventh St., San Francisco.
- Palm Iron & Bridge Works, Sacramento.
- C. J. Hillard Company, Inc., 19th and Minnesota Sts., San Francisco.
- Schrader Iron Works, Inc., 1247 Harrison St., San Francisco.
- West Coast Wire & Iron Works, 861-863 Howard St., San Francisco.

OVERHEAD CARRYING SYSTEMS
- California Hydraulic Engineering & Supply Co., 70-72 Fremont St., San Francisco.
- Richards-Wilcox Mfg. Co., Aurora, Ill., and Underwood Bldg., San Francisco.

PAINT FOR CEMENT
- Bass-Hueter Paint Co., Mission near Fourth St., San Francisco.
- Fuller's Concreta for Cement, made by W. P. Fuller & Co., San Francisco.
- Samuel Cabot Mfg. Co., Boston, Mass., agencies in San Francisco, Oakland, Los Angeles, Portland, Tacoma and Spokane.

PAINT FOR STEEL STRUCTURES, BRIDGES, ETC.
- The Paraffine Companies, Inc., 34 First St., San Cisco.
- Anti-Rust Coatings. The Glidden Co., 123 Hooper St., San Francisco.
- Premier Graphite Paint and Pioneer Brand Red Lead, made by W. P. Fuller & Co., San Francisco.
- Hill, Hubbell & Company, No. 1 Drumm St., San Francisco.

HART-WOOD LUMBER CO.

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PAINTING, TINTING, ETC.
I. R. Kissel, 1747 Sacramento St., San Francisco.
D. Zelinsky & Sons, San Francisco and Los Angeles.
The Tormey Co., 681 Geary St., San Francisco.
Fick Bros., 475 Haight St., San Francisco.

PAINTS, OILS, ETC.
Magner Bros., 414-424 Ninth St., San Francisco.
Bass-Hueter Paint Co., Mission, near Fourth St., San Francisco.
The Brininstool Co., Los Angeles, the Haslett Warehouse, 310 California St., San Francisco.
The Glidden Company of California, 123 Hooper St., San Francisco.
R. N. Nason & Company, San Francisco, Los Angeles, Portland and Seattle.
W. P. Fuller & Co., all principal Coast cities.
"Satinette." Standard Varnish Works, 55 Stevenson St., San Francisco.

PANELS AND VENEER
White Bros., Fifth and Brannan Sts., San Francisco.

PARTITIONS—FOLDING AND ROLLING
J. G. Wilson Corporation, 600 Metropolitan Bldg., Los Angeles; Waterhouse-Wilcox Co., Underwood Bldg., San Francisco.

PAVING BRICK
California Brick Company, Niles, Cal.

PENCILS
Eberhard Faber, Monadnock Bldg., San Francisco.

PIPE—STEEL AND WROUGHT IRON
Western Pipe & Steel Co., 444 Market St., San Francisco; 1758 N. Broadway, Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PIPE—VITRIFIED SALT GLAZED TERRA-COTTA
Gladding, McBean & Co., Crocker Bldg., San Francisco.

PIPE COVERINGS
The Paraffine Companies, Inc., 34 First St., San Francisco.

PIPE BENDING MACHINERY
U. S. Shape and Pipe Bending Co., 315 Howard St., San Francisco.

PLASTER CONTRACTORS
A. Knowles, Call-Post Bldg., San Francisco.
MacGruer & Simpson, 180 Jessie St., San Francisco.
James F. Smith, 273 Minna St., San Francisco.

PLUMBING CONTRACTORS
Alex Coleman, 706 Ellis St., San Francisco.
Gilley-Schmid Company, 198 Otis St., San Francisco.
A. Lettich, 365 Fell St., San Francisco.
Scott Co., Inc., 243 Minna St., San Francisco.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

PLUMBING FIXTURES, MATERIALS, ETC.
California Steam & Plumbing Supply Co., 671 Fifth St., San Francisco.
Jas. B. Clow, plumbing, Rialto Bldg., San Francisco.
Crane Co., San Francisco, Oakland, Los Angeles.
Gilley-Schmid Company, 198 Otis St., San Francisco.
Haines, Jones & Cadbury Co., 857 Folsom St., San Francisco.
H. Mueller Manufacturing Company, 635 Mission St., San Francisco.
Holbrook, Merrill & Stetson, 64 Sutter St., San Francisco.
J. L. Mott Iron Works, D. H. Gulick, selling agent, 553 Mission St., San Francisco.
Pacific Sanitary Manufacturing Co., 67 New Montgomery St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.
Wm. F. Wilson Co., 328 Mason St., San Francisco.

POWER TRANSMITTING MACHINERY
Meese & Gottfried, San Francisco, Los Angeles, Portland, Ore., and Seattle, Wash.
P. H. Reardon, 57 First St., San Francisco.

PUMPS
Chicago Pump Co., represented by Garnett, Young & Co., 612 Howard St., San Francisco.
Dow-Herriman Company, 140 Howard St., San Francisco; factory, Petaluma.
Simonds Machinery Co., 117 New Montgomery St., San Francisco.
Ocean Shore Iron Works, 558 Eighth St., San Francisco.
Rix Compressed Air & Drill Company, San Francisco and Los Angeles.
Pacific Pump & Supply Company, 851-853 Folsom St., San Francisco.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

PUMPS—HAND OR POWER, FOR OIL AND GASOLINE
S. F. Bowser & Co., Inc., 612 Howard St., San Francisco.
Dow-Herriman Co., 140 Howard St., San Francisco.
Wayne Oil Tank & Pump Co., 631 Howard St., San Francisco; 830 S. Los Angeles St., Los Angeles.
George H. Tay Company, Mission and Second Sts., San Francisco; 10th and Harrison Sts., Oakland.

REFRIGERATORS
McCray Refrigerator Company, San Francisco office, Monadnock Bldg.

REVERSIBLE WINDOWS
Hauser Window Company, 157 Minna St., San Francisco.

ROLLING DOORS, SHUTTERS, PARTITIONS, ETC.
C. F. Weber & Co., 985 Market St., S. F.

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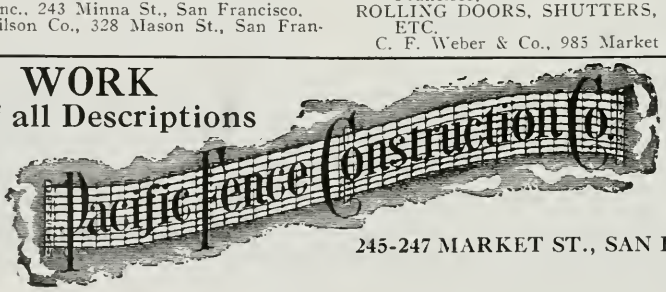

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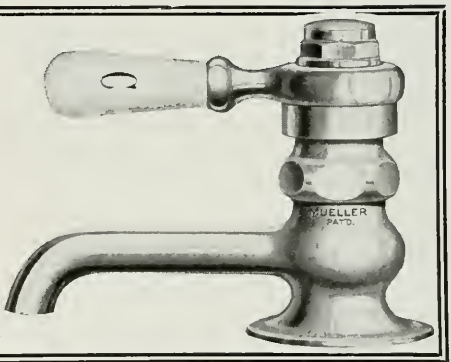

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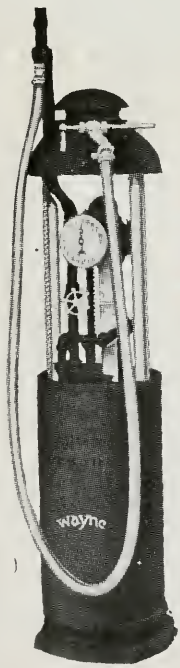

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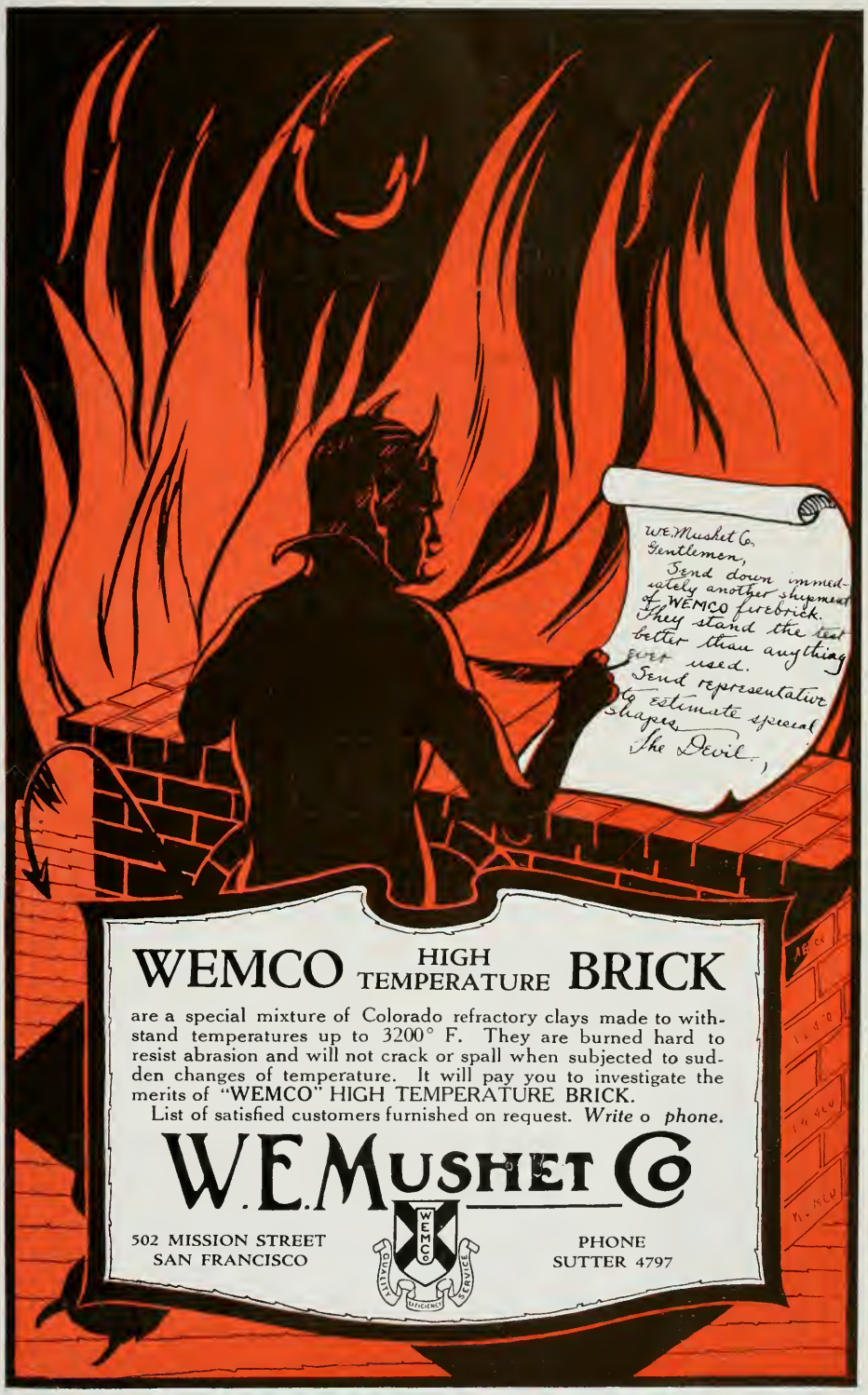
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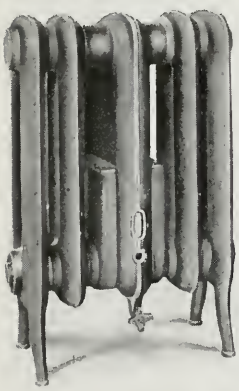

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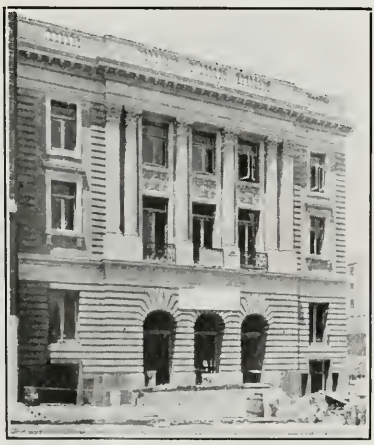

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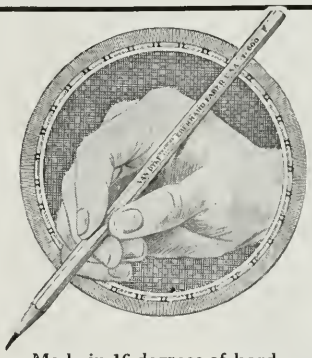

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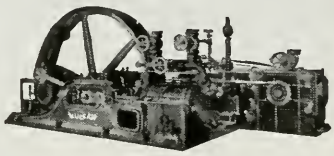

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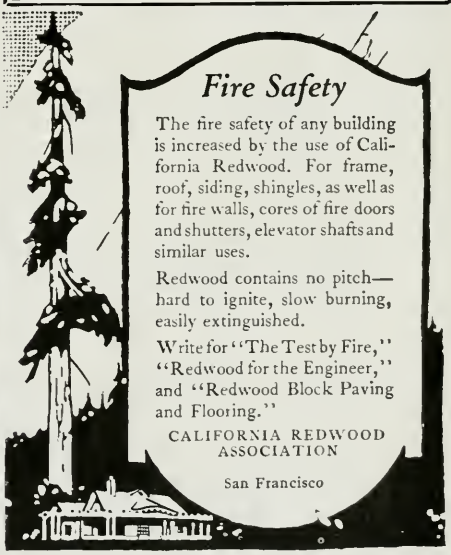

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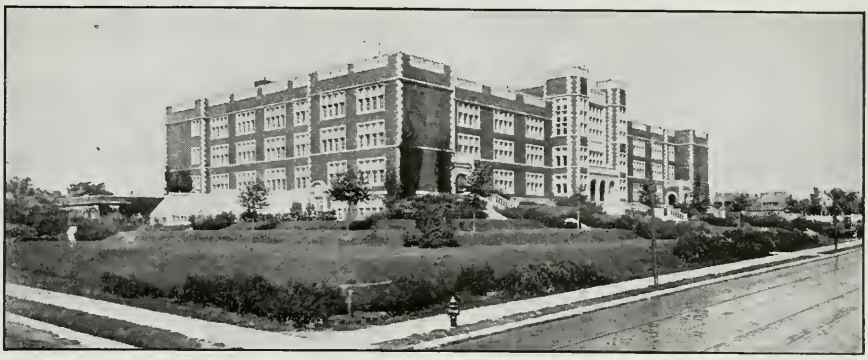

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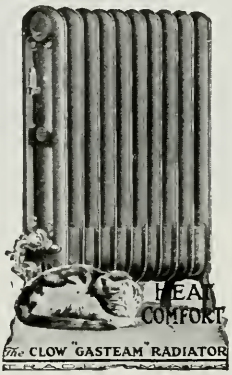

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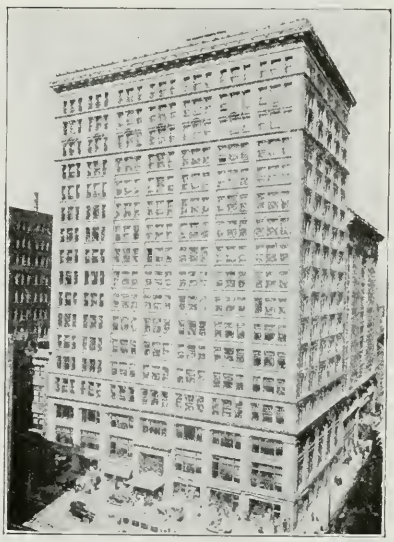

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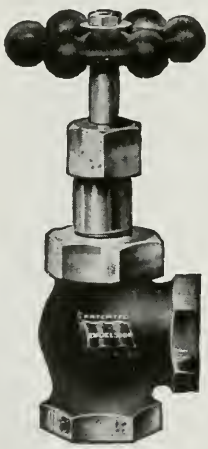

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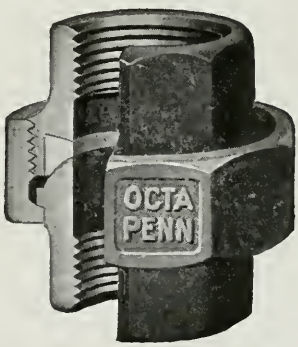

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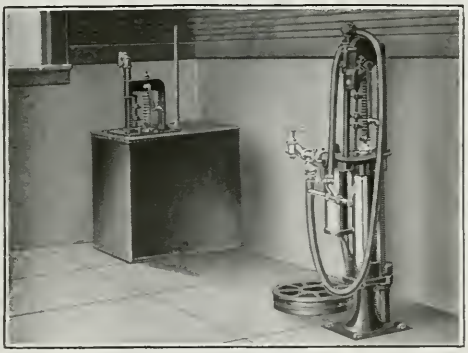

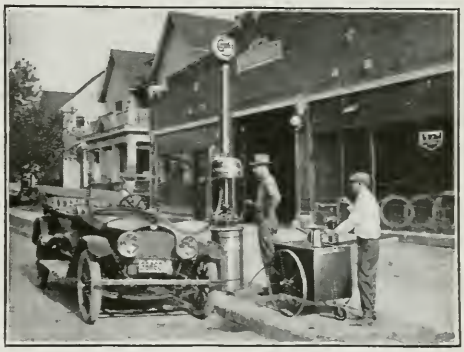

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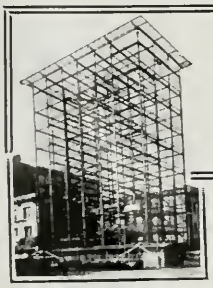

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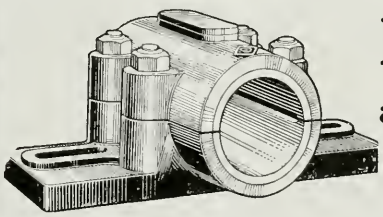

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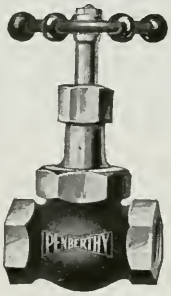

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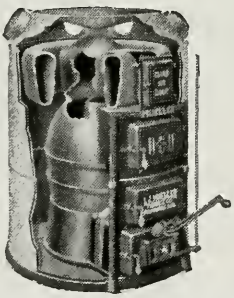

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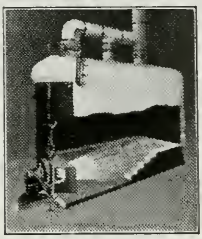

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Volume LIX. Incorporated Number 3.

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RESTORATION OF INTERIOR OF CHURCH,
SAN JUAN BAUTISTA MISSION

THE
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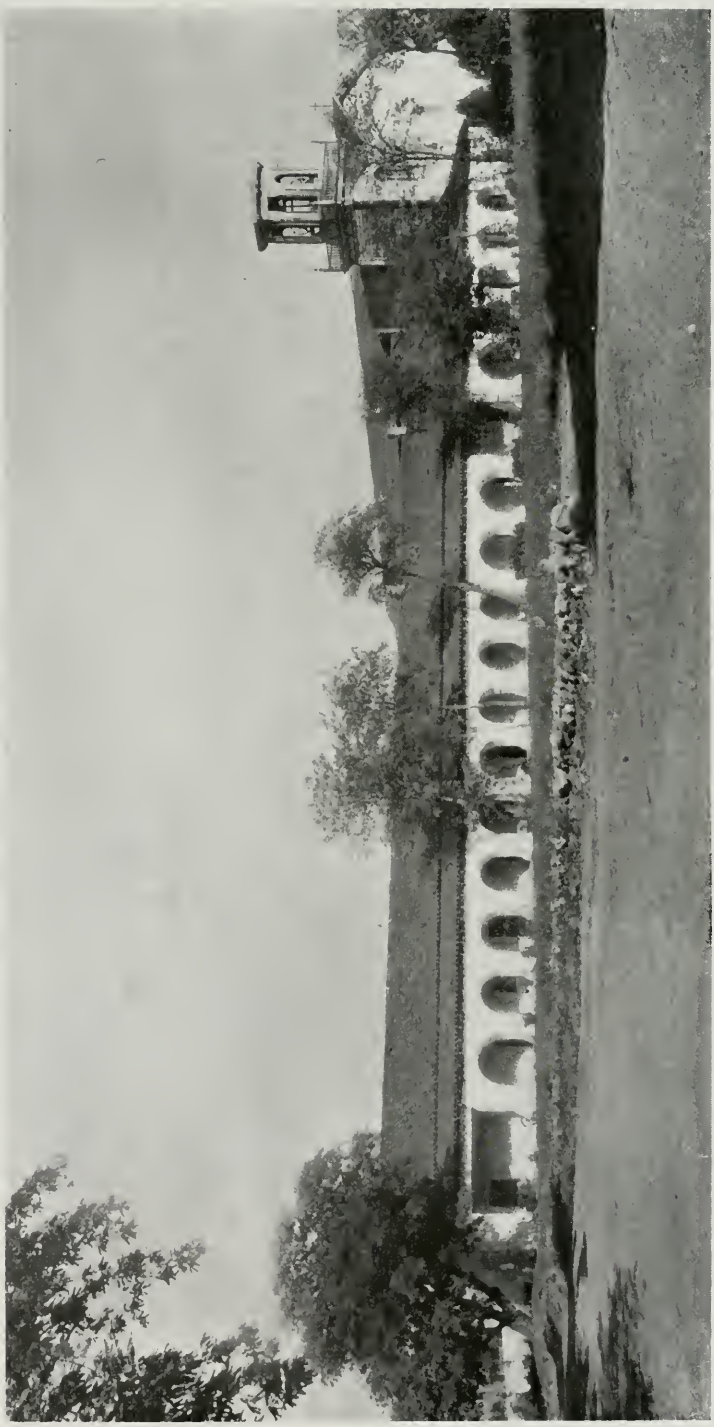
DECEMBER, 1919 Vol. LIX. No. 3

San Juan Bautista

IRVING F. MORROW, Architect

LURED on by the gleam of a polished highway, you might spin through San Juan and be gone with no realization of having left behind a town which transcends the ordinary. Several blocks of fairly prosperous stores lining either side of the road, which for this space becomes the main street of the town, would hardly distract the attention of the hurried motorist. The more leisurely might remark beauty in the reserve with which the community draws in toward tufted hills on the one hand, and looks out across a level plane of valley on the other. Yet for all that, its aspect is but that of a modern town, contented apparently, and happy, perhaps, beyond some others in the charm of its situation. But a detour of one short block from the activity of the highway brings you into the Plaza of the old town, and at one stroke you are transported into another time and another world. Here in the range of a single glance is epitomized the course of a century and a half of California history—the arduous zeal of the primitive Spanish settlement, the joyous satisfaction of days of accomplishment, the insidious disintegration of intrigue and jealousy, and the final gradual obliteration of an easy-going, idealistic civilization before the incursions of a vigorous, materialistic one. These records have become all too few. Here is one which should be reverently cherished if we have regard for the steps by which we have come to be what we are, not to speak of joy in beauty for its own sake.

EDITOR'S NOTE.—In line with the Native Sons' movement to restore some of the old Missions of California, Mr. Morrow will write of these plans and needs in a future article.



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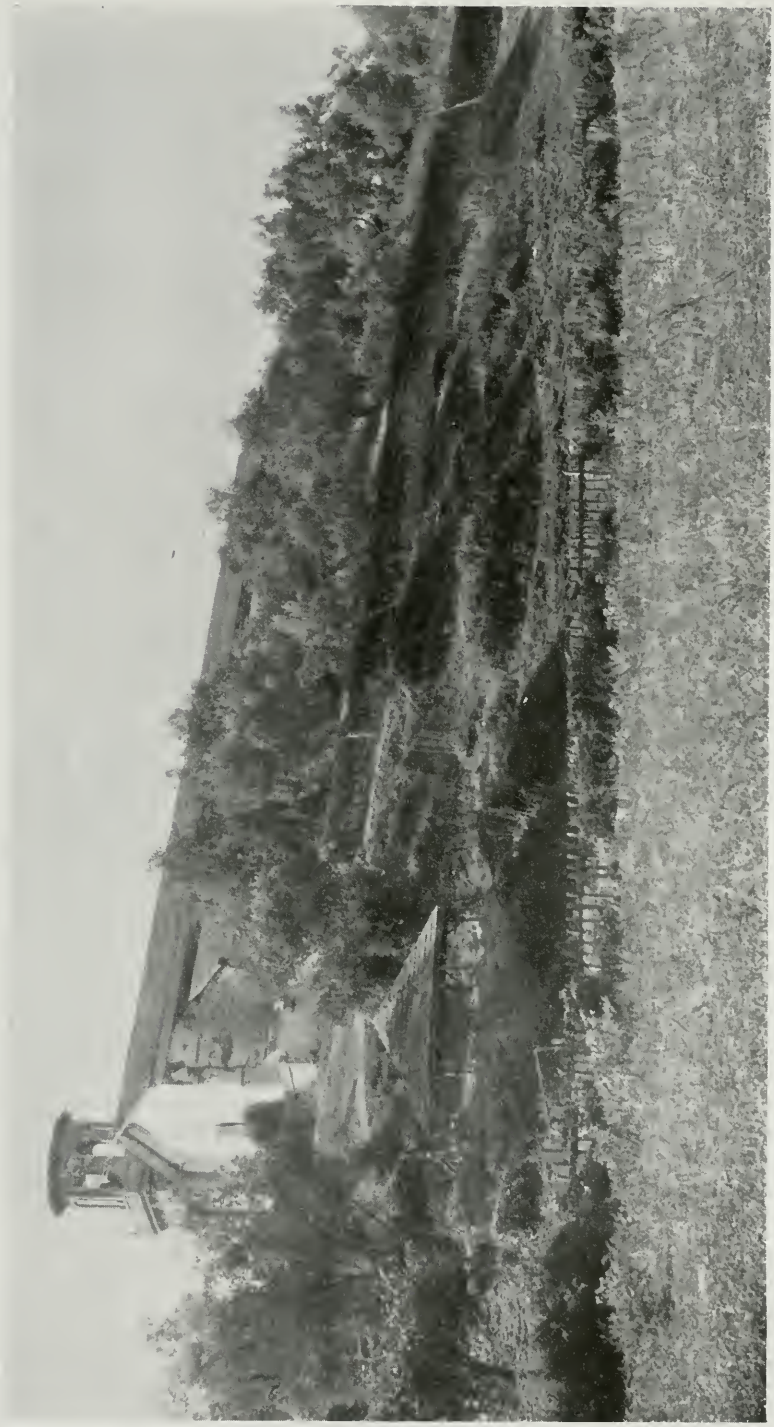

SAN JUAN BAUTISTA
MISSION FROM THE VALLEY

There is a delightful description of how this old town and its plaza and its Mission dedicated to St. John the Baptist impressed the author of Ramona some thirty-eight years ago. It occurs in the course of an account* of the Spanish settlement of California, and I cannot refrain from quoting the passage in its entirety. "At San Juan Bautista," she writes, "there lingers more of the atmosphere of the olden time than is to be found in any other place in California. The Mission church is well preserved; its grounds are enclosed and cared for; in its garden are still blooming roses and vines, in the shelter of palms, and with the old stone sun-dial to tell time. In the sacristy are oak chests, full of gorgeous vestments of brocades, with silver and gold laces. On one of these robes is an interesting relic. A lost or worn-out silver tassel had been replaced by the patient Indian workers with one of fine-shredded rawhide; the shreds wound with silver wire, and twisted into tiny rosettes and loops, closely imitating the silver device. The church fronts south, on a little green-locust walled plaza—the sleepiest, sunniest, dreamiest place in the world. To the east the land falls off abruptly, so that the paling on that side of the plaza is outlined against the sky, and its little locked gate looks as if it would open into the heavens. The mission buildings used to surround this plaza; alter the friars' day came rich men living there; and a charming inn is kept now in one of their old adobe houses. On the east side of the church is a succession of three terraces leading down to a valley. On the upper one is the old graveyard, in which it is said there are sleeping four thousand Indians.

"In 1825 there were spoken at this mission thirteen different Indian dialects.

"Just behind the church is an orphan girls' school, kept by the Sisters of the Sacred Heart. At six o'clock every morning the bells of the church ring for mass as they used to ring when over a thousand Indians flocked at the summons. Today, at the sound, there comes a procession of little girls and young maidens, the black-robed sisters walking before them with crossed hands and placid faces. One or two Mexican women, with shawls over their heads, steal across the faint paths of the plaza, and enter the church.

"I shall always recollect the morning when I went, too. The silence of the plaza was in itself a memorial service, with locust blossoms swinging incense. It was barely dawn in the church. As the shrill yet sweet childish voices lifted up the strains of the Kyrie Eleison, I seemed to see the face of Father Junipero in the dim lighted chancel, and the benediction was as solemn as if he himself had spoken it. Why the little town of San Juan Bautista continues to exist is a marvel. It is shut out and cut off from everything; only two or three hundred souls are left in it; its streets are grass-grown; half its houses are empty. But it has a charm of sun, valley, hill, and seaward off-look unsurpassed in all California. Lingering out a peaceful century there are many old men and women, whose memories are like magic glasses, reproducing the pictures of the past. One such we found: a Mexican woman eighty-five years old, portly, jolly, keen-tongued, keen-eyed; the widow of one of the soldiers of the old Mission guard. She had had twelve children; she had never been ill a week in her life; she is now the village nurse, and almost doctor. Sixty years back she remembered. 'The Indians used to be in San Juan Bautista like sheep,' she said, 'by the thousand and thousand.' They were always good, and the padres were always kind. Fifty oxen were killed for food every eight days, and everybody had all he wanted to eat. There was much more water then than now, plenty of

* Glimpses of California and the Missions, by Helen Hunt Jackson. (Boston—Little, Brown & Co.) The date of first publication was 1883. The first Paper is on "Father Junipero and His Work." Pp. 98-99.

ARCADE, SAN JUAN
BAUTISTA MISSION
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rain, and the streams always full. 'I don't know whether you or we were bad, that it has been taken away by God,' she said, with a quick glance, half humorous, half antagonistic."

This, be it observed, was written somewhat over a third of a century ago; and a third of a century is a period by no means negligible in a land which dates its earliest permanent settlement only a round century and a half back, and

FACADE OF CHURCH, SAN JUAN BAUTISTA MISSION

which has progressed with cumulative rapidity in the meantime. Therefore, even beyond the simple charm which the passage possesses, what interests me is that it is still not only a recognizable, but an eloquent description of things as they stand in the main today. Certain emendations may indeed be required affecting the town's vitality. No longer are its streets grass-grown, nor half its houses empty. It is not shut out now and cut off from everything. The railroad, to be sure, has left it a half dozen miles to one side. Thirty-eight

years ago this might have been a serious handicap; but time has brought changes, and the automobiles that throng a new and smooth Camino Real make it a matter of small importance. The marvel of why the town continues to exist has diminished; you have an explanation in part at least as you stand in the Mission arcade and watch white smoke curling up against the hill from the cement plant just beyond town. One might pause to moralize on the effort with

THE PADRE'S GARDEN, SAN JUAN BAUTISTA MISSION

which the padres produced meagre quantities of their primitive and perishable building materials, while today, within the very sight of their labors, a modern industrial plant manufactures one of the most durable and characteristically modern of materials in a profusion beyond their dreams, and out of the very ground which they trod. But for all the perishability of its materials and the primitiveness of its construction and the neglect and even abuse which it has undergone, the Mission still answers substantially to Mrs. Jackson's description.

The church has been dismantled and is no longer used for services. But a photograph I took in the Padres' garden is a most striking replica of a drawing made from an identical viewpoint by Henry Sandham, who visited the country with Mrs. Jackson, and whose illustrations are included in her book. When I read her description and look at old pictures I suspect that the Plaza may have lost some of its encircling trees; but those which remain are profuse and of noble stature; and it still remains the sleepiest, sunniest, dreamiest place in the world, and there still lingers about it that atmosphere of the olden time. It is reassuring to know that we still possess here an authentic relic of a bygone age, and our obligation toward it becomes the more serious.

Into this place of romantic retrospect I first made my way toward the end of a day of late fall, an afternoon of mellow Indian summer. Leaving my belongings at this same charming inn, which is still kept in the same old adobe building, I wandered forth into the Plaza. The gray shadow of the hills had already crept over the Mission and the locust trees, but out beyond the fence at the end, the valley and its far rim of mountains still glowed with golden sunlight. Up the valley the enclosing wooded hills were dimmed with blue and violet. The quiet beauty of the scene led me to reflect, as I have done before at others of the Missions, upon the singular felicity which the Padres displayed in the choice of contemplative sites for their establishments—or need we ascribe particular merit in this to the Padres, who worked in a land where to stop and look about is to behold some scene of gentle beauty? Nightfall and moonrise found me again at the Plaza's edge looking over the blue valley, as well as the cool gray of the following morning. Palou tells of Father Serra's joy in the profusion of wild flowers that everywhere met his tireless feet; and I like to think that the old founders must have also found delight and solace in these infinitely varied transformations that accompany the ever-recurrent coming and going of day.

But the Padres' life was by no means confined to a contemplation of quiet scenes. A mere summary of troubles and activities at San Juan is given by George Wharton James, in his book on the Missions*; and brief and fragmentary as it is, it allows a glimpse of the busy and eventful lives led by these pioneers. It starts with the Mission's founding, which occurred after the main outposts of the system had been made secure, and work had been begun on intermediate establishments which were to unite the coast by a chain of Missions located at stages of a day's journey apart along the Camino Real. Thus it goes:—

"The second of the 'filling up the links of the chain' Missions was that of San Juan Bautista. Three days after the commandant of San Francisco had received his orders to furnish a guard for the founders of Mission San José, the commandant of Monterey received a like order for a guard for the founders of San Juan Bautista. This consisted of five men and Corporal Ballesteros. By June 17 this industrious officer had erected a church, missionary-house, granary, and guard-house, and a week later Lasuen, with the aid of two priests, duly founded the new Mission. The site was a good one, and by 1800 crops to the extent of 2700 bushels were raised. At the same time 516 neophytes were reported—not bad for two and a half years' work.

"In 1798 the gentiles from the mountains twenty-five miles east of San Juan, the Ansayames, surrounded the Mission by night, but were prevailed upon to retire. Later some of the neophytes ran away and joined these hostiles, and then a force was sent to capture the runaways and administer punishment. In the ensuing fight a chief was killed and another wounded, and two gentiles brought in to be forcibly educated. Other rancherias were visited, fifty fugitives arrested, and a few floggings and many warnings given.

* In and Out of the Old Missions of California; by George Wharton James. (Boston—Little, Brown & Co.) Pp. 231-234.

MONASTERY WING ON THE PLAZA
SAN JUAN BAUTISTA MISSION

ARCADE ON THE PLAZA
SAN JUAN BAUTISTA MISSION

ARCADE ON THE PLAZA
SAN JUAN BAUTISTA MISSION

"This did not prevent the Ansayames, however, from killing two Mutsunes at San Benito Creek, burning a house and some wheat fields, and seriously threatening the Mission. Moraga was sent against them and captured eighteen hostiles and the chiefs of the hostile rancherías.

"Almost as bad as warlike Indians were the earthquakes of that year, several in number, which cracked all the adobe walls of the buildings and compelled everybody—friars and Indians—to sleep out of doors for safety.

ARCADE OF MONASTERY WING, SAN JUAN BAUTISTA MISSION

"In 1803 the Governor ordered the Padres of San Juan to remove their stock from La Brea Rancho, which had been granted to Mariano Castro. They refused on the grounds that the rancho properly belonged to the Mission and should not have been granted to Castro, and on appeal the Viceroy confirmed their contention.

"In June of this year the corner-stone of a new church was laid. Padre Viader conducted the ceremonies, aided by the resident priests. Don José de la Guerra was the sponsor, and Captain Font and Surgeon Morelas assisted.

"In June, 1809, the image of San Juan was placed on the high altar in the sacristy which served for purposes of worship until the completion of the church.

"By the end of the decade the population had grown to 702, though the number of deaths was large, and it continued slowly to increase until in 1823 it reached its greatest population with 1248 souls.

"The new church was completed and dedicated on June 23, 1812. In 1818 a new altar was completed, and a painter named Chavez demanded six reales a

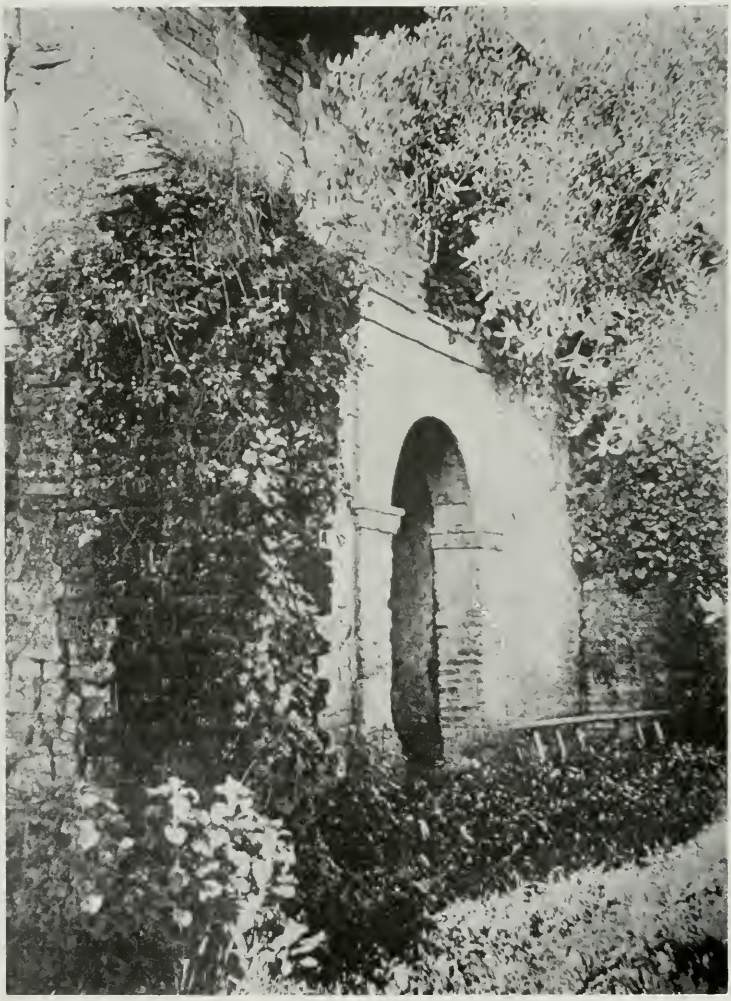
INTERIOR OF CHURCH, SAN JUAN BAUTISTA MISSION

day for decorating it. As the Mission could not afford this, a Yankee, known as Felipe Santiago—properly Thomas Doak—undertook the work, aided by the neophytes. In 1815 one of the ministers was Estéban Tapis, who afterwards became the presidente.

"In 1836 San Juan was the scene of the preparations for hostility begun by José Castro and Alvarado against Governor Gutierrez. Meetings were held at which excited speeches were made advocating revolutionary methods, and the fife and drum were soon heard by the peaceful inhabitants of the old Mission. Many of the whites joined in with Alvarado and Castro, and the affair ulti-

mated in the forced exile of the Governor, and Castro taking his place until Alvarado was elected by the *diputacion*.

"The regular statistics of San Juan cease in 1832, when there were 916 Indians registered. In 1835, according to the decree of secularization, 63 Indians were 'emancipated.' Possibly these were the heads of families. Among these were to be distributed land valued at $5120, live-stock, including 41 horses, $1782, implements, effects, etc., $1467.



DOORWAY, SAN JUAN BAUTISTA MISSION

"An inventory of 1835 gives the following: Buildings, $36,000; implements, goods, and furniture, $7774; church property (church, fully described, $36,000, ornaments, etc., $7740, library, $461, bells, $1060, choir furniture, $1643), $45,904; vineyards, lands, and buildings outside the Mission, $37,365; ranchos, probably including livestock, $19,107; credits, $1040; cash, $222; total, $147,413; deducting amount distributed to Indians, $8439, and debt $250, balance, $138,723.

"Alvarado says that secularization was a success here and at San Antonio,

though nowhere else, the Indians being free and making tolerably good use of their freedom. After 1836 all traces of the community disappeared. The Indians were uncontrolled except by the regular laws of the province. A number of whites settled in the region, and the name of the new pueblo was San Juan de Castro. The outside gentile Indians caused a great deal of trouble for a number of years, but were ultimately wiped out of existence.

"The summary of statistics from the founding of the Mission in 1797 to

DOORWAY, SAN JUAN BAUTISTA MISSION

1834 show 4100 baptisms, 1028 marriages, 3027 deaths. The largest number of cattle owned was 11,000 in 1820, 1598 horses in 1806, 13,000 sheep in 1816.

"In 1845, when Pico's decree was issued, San Juan was considered a pueblo, and orders given for the sale of all property except the curate's house, the church, and a court-house. The inventory gave a value of $8000. The population was now about 150, half of whom were whites and the other half Indians.

"It will be remembered that it was at San Juan that Castro organized his forces to repel what he considered the invasion of Frémont in 1846. From

Gavilan heights near by, the explorer looked down and saw the warlike preparations directed against him, and from there wrote his declaration: 'I am making myself as strong as possible, in the intention that if we are unjustly attacked we will fight to extremity and refuse quarter, trusting to our country to avenge our death.'

"When Sloat made his memorable landing at Monterey, and California officially became a part of the United States, General Castro was at San Juan,

DOORWAY, SAN JUAN BAUTISTA MISSION

and from there communicated with the conquerors; and it was rather humiliating to the California Commander-in-chief that when the Stars and Stripes were eventually raised over the Mission of San Juan it was done by Frémont and his forces.

"Later, when Flores revolted in the South, Frémont organized his noted volunteer battalion at San Juan. Those were exciting times for the little town, for there were 475 mounted riflemen and 41 artillerymen, organized into ten companies. The force duly marched from here on the 29th of November,

passing San Miguel to San Luis Obispo and thence over the Santa Ines range to Santa Barbara, finally to Cahuenga where the formal capitulation of the hostile forces took place.

"In 1846 Pico sold all that remained of San Juan Bautista—the orchard—to O. Deleissèques for a debt, and though he did not obtain possession at the time, the United States courts finally confirmed his claim. This was the last act in the history of the once prosperous Mission."

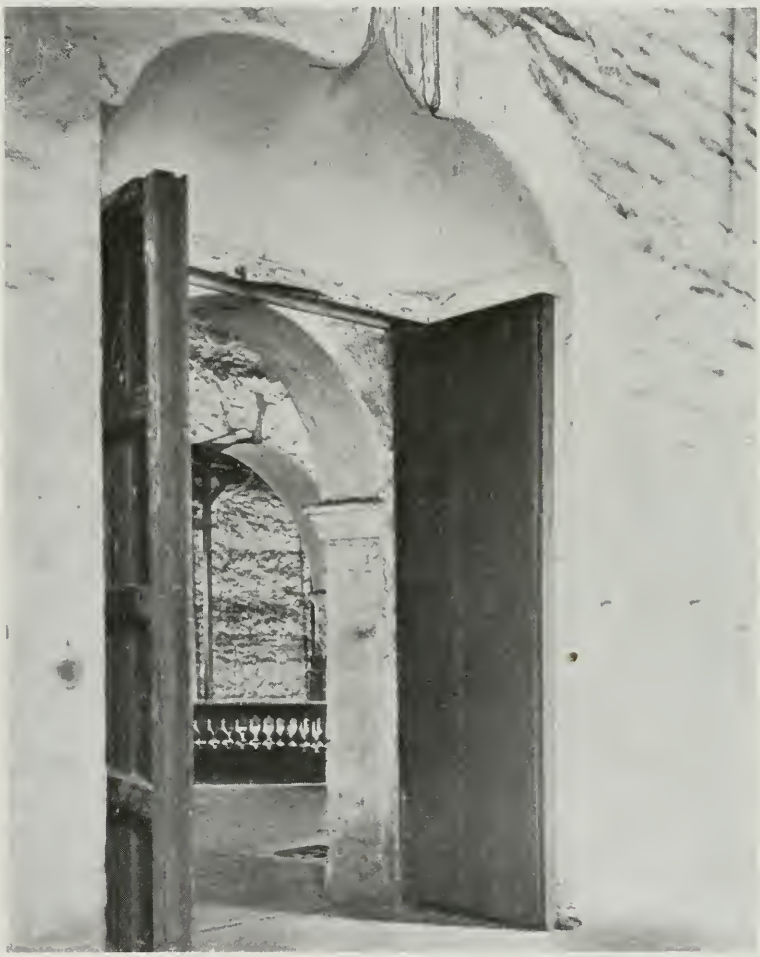
WINDOW IN CHURCH, SAN JUAN BAUTISTA MISSION

As for the spirit of the actual Mission life and its amenities, it perhaps finds more human expression in the lighter but more personal anecdotes recorded in another recent work,* which relates as follows:—

"The work of decorating the altar, which was not finished until 1818, was offered, it appears, to an artist of the time, one Chaves, by name; but this grasping genius, perhaps believing that he had a monopoly in high art, asked compensation at the rate per diem of six *reales*,—that is, seventy-five cents. That

* The California Padres and Their Missions; by Charles Francis Saunders and J. Smeaton Chase. (Boston—Houghton, Mifflin Co.) Pp. 315-317.

the missionaries deemed beyond the establishment's means, and casting about for a cheaper bidder, they chanced upon Felipe Santiago Doc. This painter of the abbreviated surname should be of more than passing interest to Californians; for, if the researches of Mr. H. H. Bancroft are to be credited, he was the first American to settle officially in California—his original name being Thomas Doak and himself a Yankee tar, hailing from Boston. He deserted from some vessel that touched on the coast, and became a good Catholic and a naturalized *Californio*. What he charged the padres for his labors I do not find set down, but naturally it could have been little more than board and



SACRISTY DOOR TO CHURCH, SAN JUAN BAUTISTA MISSION

lodging. Perhaps to that waif of the sea, with the memory of existence in a windjammer's forecastle still fresh upon him, life in a Mission may have been in itself return enough. At any rate, it is of record that this same Felipe Santiago, 'by the help of God and some *muchachos*,' achieved the altar decorations of San Juan Bautista; and I find pleasure in knowing that the faded painting about the empty niches and panels of the abandoned sanctuary upon which I looked was laid on by the hands of the American-Californian, and his little red-

skin boys. It was a better business than shooting Indians and sharping in real estate, as was fashionable with his countrymen in California a generation later.

"Then there was the quaint old box of a pulpit fixed to one side wall, well up above the latter-day pews that still occupied the nave. A small placard on the front declared that from this pulpit Father Arroyo preached to the Indians in thirteen native dialects. A famous Padre was this Arroyo, or, to give him his full name, Felipe del Arroyo de la Cuesta, (Philip of the Hill-brook). For a quarter of a century, from 1802 to 1833, he served at San Juan Bautista. He was a skilled linguist, and much of his leisure was employed in committing to

SACRISTY, SAN JUAN BAUTISTA MISSION

writing vocabularies of the various Indian dialects of the region. These have been preserved and form an important contribution to our first-hand knowledge of native linguistics. Our gossip Don Alfredo gives a pleasant picture of the kindhearted old man, who was a sufferer from rheumatism, and during the tedious hours of his confinement to his chambers, liked to have the Indian children sent in to play about him as he lay. It gave him a whimsical sort of pleasure to apply to these dusky whelplings of the wild the names of famous charac-

ters of antiquity, such as Plato, Alexander, and Cicero; though it is hardly to be supposed that he baptized them so.

"Captain Beechey, too (who, with a party bound to Monterey, stopped overnight at this Mission in 1826), bears witness to Padre Arroyo's cheerful hospitality. There were no hotels in California in those days, you must remember, and outside of the infrequent towns almost no private houses, so the Missions kept open house for all travelers. The Padre set before the Beechey party the best the Mission larder afforded, and urged them on to the consumption of it with many a quip and proverb.

'*Un dia alegre vale cien años de pesadumbre*,' he quoted;

'One happy day is worth a century of sadness.'

"After supper he entertained them with stories of bears and Indians, and sang them Spanish patriotic songs; for he, like most of the first Franciscans, was a royalist and looked askance at Mexican republicanism. At bedtime in came a luncheon of cold *frijoles*, bread and eggs—the *viático* for the night, the Padre called it; and then he escorted them to their sleeping rooms. . . . In the morning, the travelers were for starting off early for their thirty-five-mile ride to Monterey, but the Padre would on no account permit it until he had had them in to mass.

"'No, no,' he said, with authority that they could not escape. Protestants though they were, and drove the matter home with another *dicho*:—

'*Oir misa y dar cebada*
No impede jornada.'

('To hear mass and give alms delays no journey.')"

The Mission is still in a tolerable state of preservation, as the Missions go today. This is not to say, however, that proper veneration for antiquity and a lively appreciation of beauty could not readily find possible work to the value of many a dollar. The sins have been both of omission and of commission. If any gratification is to be derived from its present condition, it is perhaps at most the negative one that in its main portions, at least, it has not suffered that degree of disintegration which in certain of the Missions is fast obliterating even the evidence for an authentic restoration; and that the later interpolations have been of an aggravated incongruity which suffers no doubt as to their impropriety. The main structure still remains intact, although evidences of weakening have appeared at more than one point; the purging of obviously unwarranted additions should not be difficult.

The original plan of the Mission was of the typical scheme, with monastery wings enclosing a court, and a church at one corner. Of this there remains today but a portion of two wings, in the form of an L—an arcaded monastery wing about 270 feet long, from one end of which extends a church at right angles, backed up by various accessories.

The main feature of the exterior is the arcade. It is good in both scale and proportion, and the honest simplicity with which it is handled gives it true dignity, not devoid of charm. The church facade is of extreme simplicity, but the integrity of its design and construction carries conviction. The wooden bell tower is modern. James* attributes it to Father Rubio, in 1874. It is one of the crowning examples of stupid and inept Mission reconstruction. It comes as near as anything could to ruining the effect of the naively noble facade. It can be seen from all positions, and from all positions is equally wrong. It really requires a certain genius in ineptitude to achieve anything which is so thoroughly bad without being extravagant. Even worse, perhaps, than the incongruity of the design is the relation of its planes and its mass to the remaining composition—a

* Op. Cit.—p. 235.

ARCADE, SAN JUAN BAUTISTA MISSION
From a drawing by Eugene Leslie Smyth.

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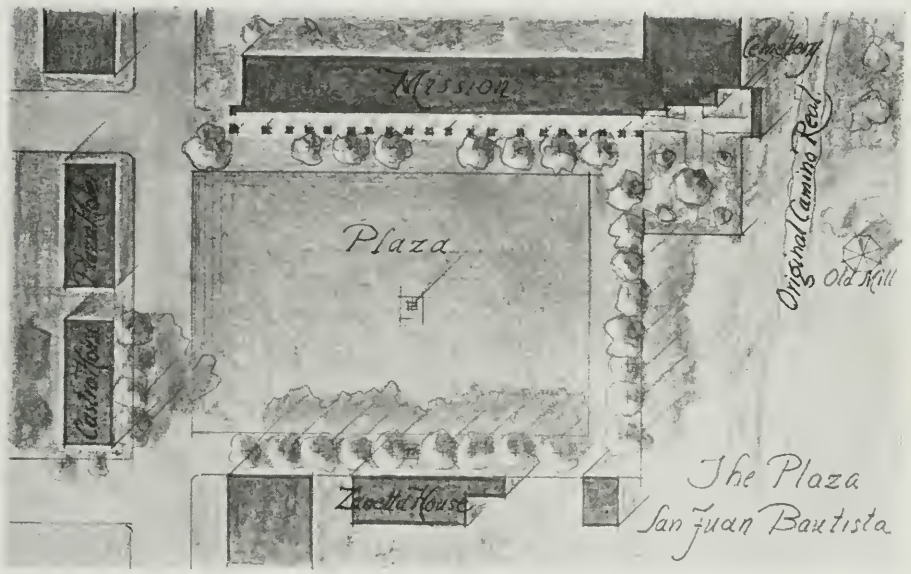
subtle infelicity of which the old builders could never have been guilty; for however crude was of necessity their execution, their instinct for the fundamentals of composition rarely failed. In the olden days the bells of San Juan Bautista were famed afar for the sweetness of their tones. They have been dispersed and scattered, some of them re-cast and thereby ruined. It is a pity that their memory should be perpetuated by such an offense. How they were originally installed I am unable to say; I have seen no document which would indicate their former disposition, nor am I aware if such exists. But of one thing I feel certain, and that is that this tower should be demolished at the earliest opportunity; and if there is no evidence for replacing it in conformity with the original intention, someone possessing sympathy with the spirit animating the Padres' work should be commissioned to design a belfry less objectionable than Father Rubio's.

PLAZA HOTEL, SAN JUAN

The church is distinguished by a higher degree of architectural differentiation than any other, I believe, of the Mission churches. Typically they were simple naves, often showing not even so much as an architectural demarcation to isolate the chancel. Here we have not only a chancel separated from the nave by a great arch, but side aisles as well. The aisle arches are all filled in, save the two nearest the altar on each side. The outside walls of the aisles have partly failed, and their roofs to some extent fallen in; and it was my impression when going over the building that these aisle arches had been blocked as a safety measure to protect the nave. I find that James* asserts (whether on assumption or evidence he does not state) that the church was built with these arches closed, with the idea of opening them up and increasing its capacity when circumstances should so warrant. His view would seem to be supported by the fact that these curtain-wall fillers are of adobe similar to the main construction, and are plastered uniform with the rest on the nave side;

* Op. Cit.—p. 236.

also by the fact that the pulpit is corbeled out from the middle of one of these filled bays. But whatever the reason for the present curtailment, it is obvious that the original design contemplated either side aisles or rows of chapels flanking the nave; and I believe I am correct in stating that in this it is unique among the Mission churches. In addition to its greater elaboration in plan, it is also one of the most spacious of them all. Under the original roof structure, which presumably was some form of open trussing, has been nailed a later ceiling of flush-jointed tongue and groove sheathing, divided into huge panels by a painted design. Similar treatment has been accorded the aisles; one of the photographs shows some of this sheathing coming off from the original aisle beams. These ceilings are without incident and texture, and the scale of the



PLAN OF SAN JUAN PLAZA

painted design is staggering; in the nave, also, the ceiling cuts in almost tangent to the top of the huge chancel arch, rendering thin and trivial a feature which in actuality was adequately full and robust. I cannot contemplate these ceilings without wondering if they, too, are part of the "improvements" of Father Rubio; for though I have no evidence to fasten them upon him, their atmosphere savors of the seventies or eighties of the last century. But this point I am charitable enough to leave unpressed, as the tower constitutes a sufficiently heavy indictment to be borne by any one holy man. Even in its present condition, neglected, abused, and dismantled, the aspect of the interior is impressive. Its planning is good, its dimensions generous, its proportions noble, and it has been handled with dignity and restraint; and in these it possesses the essential requirements of good architecture.

Filling the end of the chancel still stands the large wood reredos, with its painted decorations applied by Felipe Santiago "by the help of God and some

muchachos." Though referred to as "faded" in the passage quoted from Saunders and Chase, I found them still vivid almost to the point of garishness; in fact, I marveled that these workmen had been able to make pigments which have endured a round hundred years without apparent dimming. But the entire altar and reredos, like the remainder of the church, are now dismantled, and unused, I believe, save on one special festival occasion each year. In the chancel is also a stone floor slab bearing an inscription which designates it as the last resting place of Padre Estéban Tapis, who died in 1825, after thirty-five years of service in California. Padre Tapis was for a time at the Mission, and later became Presidente. He was a musician, and composed part songs for the use of the neophytes. The Mission still treasures among its relics several volumes of his compositions, put down on parchment with his own hand. They are picturesque volumes, impeccably written, with each voice indicated in a different color. It would be interesting to run over some of these pages with a view to judging the value of Father Tapis' musical inspiration.

The rooms of the monastery wing are for the most part plain plaster walls with exposed ceiling joists, devoid of pretense of architectural embellishment. Several of these apartments, however, are not without interest. The bakery, with its huge trough for bread mixing, and the kitchen, with its great open fireplace and chimney hood, give an idea of the scale of activities of the familiar mission life. One of these rooms is now given over to a veritable museum of ancient relics. There are numerous paintings brought from Mexico and even Spain; interesting, however, principally for their antiquity and for the vicissitudes of transportation they must have undergone. There is a profusion of embroidered ecclesiastical vestments, some of great richness and beauty. There are also chairs of no mean design, brought from Spain; the wood is now riddled by wood borers, and at the touch tiny streams of fine sawdust drop from innumerable pin holes. The collection of miscellaneous objects is too numerous to catalogue; but many of them, such as the plumb-bob used in building, are of great interest. There is also a barrel-organ which never fails to attract attention; it was made by Benjamin Dobson, London, and could render the following appropriately ecclesiastical selections: "Go To the Devil," "Spanish Waltz," "College Hornpipe," and "Lady Campbell's Reel." On certain occasions the Padres carried this instrument great distances into the country for outdoor services or ceremonies with the Indians. A turn of the handle still evokes disconnected notes.

That the Mission builders were prompted by a genuine desire for beauty, and, despite all handicaps, often skillful in attaining it, is evidenced by many quaint and charming and ingenious details in places where unadorned construction would have afforded equally practical service. Several of the small minor doorways are designed with arches resting on moulded imposts, for no apparent reason other than the satisfaction of doing interesting things. The whimsical niched door heads in the heavy walls of the sacristy are decidedly piquant, and bespeak a certain good-humored vitality. Grilles of turned wood spindles appear in several of the windows and doors. Fragments of painted designs are

CASTRO HOUSE, SAN JUAN

still visible on the plaster walls beneath subsequent whitewashings.

Falling plaster and failing beams reveal the nature of the original construction. The walls are in the main of sun-dried adobe bricks, and of great thickness. Piers and arches of the monastery arcade, as well as certain corners and piers of the church, are built of burned bricks, flat like tiles in form, and of material resembling the terra cotta roof tiles. The amusing construction of these arches can just be descried

CASTRO HOUSE, SAN JUAN

in one of the photographs. The great depth of the flat tile voussoirs makes it impossible to provide adequate radiation by widening the joints; therefore, as they ascend the arch from each impost, these tiles lie one on the other at successively greater inclinations from a normal to the soffit, until, when the top is reached, a V-shaped void is left in the position of a keystone, which is filled with adobe. Burned tile flagging also covers the floors of arcade and church, and the roofs are of Spanish tile.

All of this terra cotta is of a deep brick-red color. It is softer and more unequally burned than modern clay products; but the marvel is that, with their extremely limited facilities, both in materials, equipment, and labor, these old craftsmen succeeded in achieving any really practical result whatsoever. The roof tile in particular is of great beauty; its variation of tone and size produces a texture which would be the despair of modern kilns, with all their technical superiority. Metal was of all

CASTRO HOUSE, SAN JUAN

materials the scarcest in the early days, and examples still stand of assemblages of timbers which, instead of being spiked or bolted, are bound with rawhide thongs. Timber was of necessity hewn. Most of the wood now visible about the building is later-day machine-cut lumber which has replaced the decayed original.

The once extensive Mission estates have been restricted until today there remain but a few acres immediately surrounding the building.

Here, behind the monastery, as well as along the east side of the church, on the edge of the slope which drops to the valley floor, century-old olive trees are still flaunting gray-green foliage. Out in the valley are the remains of the Padres' pear orchard. The trees have acquired great dimensions, with much picturesque and venerable gnarling of branches; and in the late fall when I was there they had taken on a carnival garb of flaming red and orange. A few pears hung from the high branches, and although they were still unripe, I could not refrain from indulging the satisfaction of having eaten fruit from the Padres' orchard. Along this ledge at the east side of the church is the old Indian cemetery; and there also runs a strip of the original Camino Real. Through the town only a few hundred yards to the west innumerable automobiles hum at all hours over today's Camino Real. It gives one cause to look upon this narrow strip of road along the hillside and reflect that over its uncertain surface toiled cumbersome caravans bearing motley collections of church bells, paintings and statues of Saints, and ecclesiastical altar trappings, not to speak of the thousand and one miscellaneous articles which were necessities to a mere physical existence in a wilderness.

Though the Mission is the most interesting, it is not the only interesting legacy which a romantic past has handed down to San Juan, and it is a matter for satisfaction that all of these relics cluster about the Plaza, where their unity can and should be preserved. Across the corner adjoining the end of the monastery wing of the Mission stands the old Plaza Hotel, whose first floor antedates the Mission structure itself. It is a building of a charming type of Spanish-Californian architecture made familiar by perhaps better-known examples in Monterey. The walls are heavy adobe, with few but generous openings. Along the entire length of the facade at the second floor level runs an overhanging wood balcony corbeled out on projecting joists, with high wood rail and posts holding the roof, but no support from below. It is a delightful feature of the plan that this balcony serves as the actual and only second story circulation, from which the rooms open with shuttered doors. This old building has housed many a celebrity of early days, and seen the making of some California history. Along the middle of the last century it was kept by one Angelo Zanetta, a prominent inhabitant of the town. Zanetta's itemized ledger accounts with steady customers back to 1857 are in the hotel archives today. The book is written in an impeccable hand on a fine quality of paper, and with ink which is now a mellow coffee brown. There are entries, such as the cheapness of wines or the expensiveness of oyster stews, which make one gasp today. The hotel also possesses registers going back to 1861, a careful perusal of which would doubtless yield many a renowned name; for until the building of the railroad San Juan was one of the stage stations on the main highway. Commercial necessity has imposed a singularly infelicitous marquise affording shelter between the street curb and the hotel entrance; and while I am ready to admit the necessity, I regret the inept way in which it has been satisfied. Adjoining the hotel is the old General Castro house, a building of similar type, but perhaps better in proportion, and surely more attractive as it withdraws behind its line of trees. It really possesses great charm, and

ENTRANCE TO THE
CEMENT PLANT, SAN JUAN

should be preserved by the community and put to some appropriate public use. Its present condition appears not bad; but with large patches of plaster falling, a few winters will begin to wash out the exposed adobe, and it will go the way of many another landmark which a few well-timed repairs might have saved. Opposite the Mission is another house originally belonging to the afore-mentioned Angelo Zanetta. It is subsequent to the Spanish period, but not incongruous with the earlier structures. Under the locust trees before his house Zanetta set up a yellow sandstone pedestal fountain and a sandstone drinking trough, inscribed with his name and the date in incised letters. Small and inconspicuous as these features are, they do as much as anything about the Plaza to lend an old-world atmosphere to the place.

This Plaza, in fact, constitutes one of San Juan's chief assets, and it is to be hoped that the community will never suffer its charm or its historical significance to be impaired. This is not to say that it should be neglected; it should, in fact, be intelligently and sympathetically developed. A movement has been set on foot to pave the street along the Plaza's west side from the northern border of the town, where the State highway now deviates to the main street, and thus re-route the highway through the Plaza. The motive is undoubtedly a praiseworthy desire to benefit the town, but I believe the plan is a mistaken one, due to the common tendency to apply to all things a commercial scale of values, and I should regret to see it accomplished. Around the Plaza there lingers a subtle aroma of former times, which is perhaps its greatest value; and in the face of such a violation of its seclusion this would most assuredly evaporate. It would be a preferable policy, as well as a cheaper one, to pave the two east and west streets which now connect the north and south lines of the Plaza with the present highway. Considerable traffic would still flow through it, as it now does; but the point is that traffic on a detour passes with spirit and effect far different from through main-line traffic.

My first entrance into this Plaza evoked recollections of the spirit of town squares I had seen in Spain. Possibly I should avoid the expression "town square", for in America it means an open place by the railroad station, where a lawn with "Welcome" in colored plants is surrounded by an iron rail with spiked top. But in Spain, as in all the Latin countries, people possess a healthy capacity for simple and natural enjoyment; and there the town square or plaza is a place where life may be enjoyed. Some day, perhaps, the American public will acquire a knowledge of how to use its public places (which at present are merely saved to put school buildings in at some future date). I shall not venture to suggest that such knowledge may lead to the "improvement" of San Juan Plaza; for with us "improvement" implies the initial destruction of whatever exists. But I can see this Plaza in my mind now as it will then appear, provided only that the arrival of such a time be not too long delayed. There will then be felt that happy continuity of past and present which only intelligent reverence is able to achieve. The buildings surrounding the perimeter will then be as true to the form and spirit of their original selves as rational use and sympathetic care can have made them. Gaps in the encircling line of trees will have been filled in. The

ROCK CRUSHER AND ROCK PILE
CEMENT PLANT, SAN JUAN

flag pole in the center will have been provided with dignified base and setting, or replaced by modest fountain or monument; (Zanetta's old fountains will still be cherished). The central space will not be parked in the formal style, for proper upkeep would be too burdensome; but it will be planted with low native growths which will be natural and maintain their own appearance. There will be no fences, or signs to keep out of this or off of that. Benches will line well paved paths beneath the trees, and at the east end there will be low hedges and seats looking out over the quiet valley. Here of a noontime or evening a few loiterers will stroll or rest, while on Saturday nights, with band playing, the townspeople will promenade about the square and buy refreshments at amusing booths tucked unobtrusively among the trees. There may even be pavements where people can dance. There will also be carnival days, when the surrounding population will come in, and confetti and streamers will fly. All this, which I presume appears fantastic and impossible, I have seen myself in Spain and Italy and France. We are now displaying unusual eagerness to emulate the afflictions under which these countries labor; why might we not throw equal zest into adopting some of their advantages instead?

* * * *

NOTES ON THE ILLUSTRATIONS

The drawings on the cover and on page 63 are reproduced from "The Missions of California", by Eugene Leslie Smyth (Chicago; Alexander Belford & Co.—1899). The illustration on page 47 is from a photograph by S. L. Willard, published in "The Old Spanish Missions of California", by Paul Elder (San Francisco; Paul Elder & Co.—1913). The photographs on pages 56, 57, and 58 are by L. S. Slevin, Carmel. The photograph on page 64 is from a local post card. The remaining illustrations are from photographs and drawings by the author; the former having been taken with the kind permission of the Rev. Fr. O'Reilly, who is in charge of the Mission.

As to the drawings: The plan of the San Juan Plaza is not based on measured data; it is drawn from memory only, and is intended merely to show the general layout of this square, where the principal interest of San Juan centers; north, which is not indicated on the plan, is at the top of the drawing. The frontispiece, entitled "Restoration of Interior of Church, San Juan Bautista Mission", embodies no archaeological investigation in regard to details. It is rather an attempt to visualize the ideal which must have animated the designers, and which, due to decay and alterations and disuse, can only be realized today by an effort of the imagination. No photograph of the interior has been included, for the reason that those available emphasize its misfortunes and fail to suggest its native virtues. The three drawings at the plant of the Old Mission Portland Cement Co. exemplify the contrast between the old San Juan and the new. They make no pretense to photographic accuracy, but are records of impressions of picturesque aspects gathered during an interesting inspection of the plant.

CEMENT PLANT, SAN JUAN

Banking and Building of Today and Yesterday

By H. T. UNDERWOOD

I WAS talking to a banker in a comparatively small town in Alabama the other day. He had just signed a contract with me to construct and equip a new building for his bank, and I confess I was a bit astonished at his knowledge of what constituted the "last word" in bank equipment and appliances. He was getting along in years, in fact just about at that age when most men are referring to "the good old days." And, as I said before, it was a rather small town. Yet, here was a banker who not only wanted the best for his community, but knew what the best was.

Mr. Banker told me frankly that he wanted his building to rank with the best in the land from an architectural standpoint—so that every person in the town could be proud of the structure, and so that it might set an example for other building owners to follow. As to equipment, mechanical appliances and conveniences, he insisted that he wanted his customers to feel that they were being taken care of in a modern, up-to-date manner.

"It is awfully easy," he said, "for us to go along and think our past reputation will hold us up; but times change, new generations come into power and the old fogey who does not keep up with the procession is soon out of the running. A new building with the latest improvements will cause every one in this section of the country to know that we are progressive, safe and sane."

Really I wanted to applaud these words of wisdom, but when I complimented him on his wide-awake attitude, he said:

"Oh, pshaw! If I didn't keep my ears to the ground I'd have been out of business long ago. There are too many people fighting the new ideas as it is. Some of us have got to fight for them. Why, you remember it has only been a few years when all of the coins handled during the day had to be counted and sorted by hand every night. Then along came a man with a machine that did the work. All you had to do was dump the change in a hopper and out it came all separated, wrapped and labelled. Don't you recall how the bank clerks objected to the machine? Said it would take their work away from them!

"Then there is that machine that makes change for the teller quicker than he ever could count it. Look at the automatic writing machine where a teller can write a message in his cage which is duplicated on a sheet of paper in the bookkeeper's room! Look at the machine which cancels checks. Why, if they had to cancel checks by hand in the big city banks, they would have to have ten times the number of clerks and twice the floor space."

"Yes," I interrupted. "And how about the mailing department with its automatic letter openers, and the folding, sealing and stamping machines? And the dictaphone to speed up stenographic work and save a busy man's time, and the mimeograph letter writers that turn out imitation typewritten letters by the hundreds?"

"Sure," he said. "But those are more for the big banks in the big cities. For us fellows out in the country one of the greatest helps has been the adding machines that can't make mistakes, the monthly statement writing machines and the ledger posting that keep bookkeepers from growing gray before their time."

The development of machinery in the banking business has been remarkable, and the efficiency, time and labor saving brought about by the adoption of mechanical methods can never be computed.

But these devices have not surpassed another phase of banking development. I refer to the features of planning, building and equipment generally. It is only in the last dozen years that banks, particularly those in small towns, have been planned and built with any degree of efficiency. Yet, no kind of building work calls for greater skill. It did seem to be a fairly simple matter: A certain number of cages for the tellers, space for the officers, a room some place for the bookkeepers and the other employes; perhaps a safe deposit room. A bank used to be a hard place to get into; there was no note of welcome; nothing of cheerfulness, nothing of comfort or convenience, and little or no attempt at scientific arrangement.

Nowadays, it is recognized that a bank's primary function is to render a service, particularly a service to its customers. To render that service in the best possible manner, it is necessary that the banking room be laid out scientifically. The problems of the bank building, while seemingly simple, are indeed intricate, and the proper arrangement of space, logical placing of departments and apportioning of space, call for an order of architectural and constructive intelligence that can come only from specialization in bank building work.

There are architects who have given this type of building much study and they may be depended upon to design a structure that is not only ornamental but practical in every way.

* * *

The First Pan-American Congress of Architects

THE Organizing Committee has announced that the first Pan American Congress of Architects will meet March 1, 1920, at Montevideo. The architects of all the Americas are invited to attend and to exhibit their work, and the presence of the presidents and faculties of all schools of architecture is especially desired. The chief purposes of long planned convention are the demonstration of American architectural advancement, the discussion of artistic and technical development, and the increase of professional solidarity. Both practicing and student architects are eligible as exhibitors, and prizes will be awarded to architects, schools or faculties, and individual students in accordance with the decisions rendered by a chosen international jury composed of professors of architecture.

The work of architects for exhibition are comprised in the following classification:

First—Projects of public buildings and monuments.
Second—Projects of private buildings and monuments.
Third—Projects of decoration.
Fourth—Details and motives of architecture.
Fifth—Works upon the History of Architecture in America.

The projects mentioned in the first two classifications must be presented with their plans, frontage and sections. They may or may not correspond to buildings already finished. When dealing with completed buildings the exhibitor may present photographs of frontages or interiors to complete his idea. Details and perspectives will be admitted.

The projects of decoration mentioned in the third category must be composed of all the parts necessary for their clear understanding. Details and motives of architecture referred to in the fourth category may be presented in the form considered best and photographs will be accepted in order to complete subjects. Studies upon the History of Architecture may be presented in accordance with the best judgment of the exhibitor.

All exhibits must deal with buildings or monuments already constructed or to be carried out in America.

Exhibits must have the name and address of the exhibitor as well as its destination written clearly, and must be delivered to the Organizing Committee at Montevideo not later than February 10, 1920.

There will be established one or more Grand Prix D'Honneur with Gold Medal for the best projects corresponding to the first three categories of works, Gold Medals, First Mentions with Silver Medals, Second Mentions with Silver Medals and Merit Diplomas for every one of the five categories.

Work of students which has been done in the schools under the direction of the professor and with his approval, is eligible, providing it has been completed within the term in which programmed and is accompanied by such program. The signature of the professor and of the student and the date must also be upon the work.

One or more Gold Medals for the best works presented by each school or faculty, and Silver Medals, First Mentions and Merit Diplomas for the best works of each course.

* * *

Saving the Trees

Frequent petitions are presented to the California Highway Commission for permission to cut down the trees on the State highway, where property owners allege the said trees shade their land, or cut off their view, etc. The Commission's policy, in such matters, is to consider the larger interests of the public and to preserve, not only the trees, but all other land marks that make the highways attractive and traveling a pleasure.

Mr. Henry Pankey, of Irvine, Orange county, has recently been advised by the Commission that his petition to chop down certain eucalyptus trees in front of his property on the State highway is denied, for the reason that such trees are considered an enhancement of the beauty of the State highway and their removal is contrary to the policy of the Commission to preserve shade and ornamental trees along the State highway.

* * *

For Those Who Depend on Luck

Luck pictures a dollar, while work earns it.
Hard luck is almost a synonym for laziness.
Good luck is the twin brother of hard work.
Luck walks, while work rides in a carriage.
Luck dreams of home, but work builds one.
Trusting to luck is like fishing with a hookless line.
Luck is a disease for which hard work is the only remedy.
Luck longs for a dinner, while labor goes out and earns one.
Luck goes barefoot, while work never lacks for a pair of shoes.
Luck takes a nap, while brains and hard work are winning prizes.
Luck needs a P before it to make it worth anything.—Exchange.

* * *

Some Knock

Patience—"Every woman at the meeting today said I had a perfect figure."

Patrice—"Indeed! How many women were there?"

"Just fifteen."

"Well, I read in the paper only last week that only one person in fifteen has perfect eyesight."—Yonkers Statesman.

Notes on Interior Decoration

RUGS, AND THEIR PLACE IN THE FLOOR PLAN

WHY is a rug? Further than that, why are so many rugs, which is a different question entirely. But a rug is to protect the floor, isn't it? Or to protect your feet from the hard floor—the rule works either way. Anyway, the prime reason for a rug is use, not beauty or location; it is too bad this apparently unheard of fact is not known more universally, or put into practice at least. Haven't you gone into a room and been so impressed by the absolute regularity of the placing of the rugs that you forgot to remark what redeeming features the room might have had? And of course rugs placed like crazy quilt blocks have the same disturbing effect. But if you place the rugs with the first thought to need and the second thought with relation to other objects and to the shape of the room, you need not be afraid of the result.

A large, long room ordinarily demands one large rug to cover the greater part of the center of the room, where the central rug is supplemented by smaller Oriental rugs placed where the greatest wear comes on the floor.

The piano bench naturally demands a rug, and it should be long and rather narrow, following in general the outlines of the bench. This will help to erect a pleasing harmony which goes to make up the charm of the room. An open doorway needs one, if there is no sill. But it is not necessary to lay one every place where steps are taken; the result would be patchy and confused.

No general laws can be made, however. It is a case of trying different effects for yourself, and suiting your own needs and tastes. Get the general shape and proportions of the room and then place squares or circles or rectangles for the spots where your furniture stands. Draw a dotted line along the routes where you most frequently walk and then decide where to place your rugs. It's much easier to erase lines than to lift the rugs about. Much satisfaction can be obtained from following this procedure, and then, too, you may save some money.

BED ROOMS REFLECT OWNER'S PERSONALITY

What waits at the head of the stairs? Bed chambers of restful invitation, of whole-hearted hospitality, of refreshing slumber-comfort?

Casual visitors see your hall and living room—on parade, dressed for company. Your most intimate friends judge your household ideals, your life-standards, by the character portrayed in your bedroom appointments.

Bedrooms, more graphically perhaps than any other refuge beneath the rooftree of home, reflect personalities. And a bedroom endowed with the individuality of the owner is a thing of joy forever; a fountain-head of rosy visions, of keenest satisfactions.

A place to sleep? Aye—but a place also in which to live and in the living experience that inborn satisfaction that is given only to people who surround themselves with furniture of character.

GATE-LEGGED TABLE FOR DINING ROOM

If your dining-room is comparatively small, and suggests quaint rather than elaborate equipment, have you ever considered the possibilities of the gate-legged table and the Windsor chair? Gate-legs are now made in extension styles, or may be had with drop leaves which, when raised, afford a sufficiently spacious family board. Few furnishings are as harmoniously (as well as historically) associated as the gate-leg and the Windsor chair; the latter may be selected to match in sets of six, including the conventional host or arm chair.

LAMPS THAT ARE LOVELIER THAN EVER

Lamps are lovelier than ever, it seems. Since the painted furniture has been so popular there have developed the painted standards for lamps, both piano and table. An unusually handsome lamp is decorated in black with a climbing vine in green and golden yellow, in a very tiny design winding up the standard. The shade is of shirred golden silk finished about the top and bottom with narrow black silk cord.

* * *

England to Build 250,000 Homes

PLANS providing for 250,000 houses with government financial assistance have been made in Great Britain in an attempt to meet the housing needs of the nation, according to a report by Mr. Albert Farwell Bemis, a member of the commission sent by the National Civic Federation to England, France and Italy to study industrial conditions.

Mr. Bemis, who is president of Bemis Brothers' Bag Company of San Francisco and Boston, represented the interests of the American employers on the commission.

"In France," said Mr. Bemis in his report, "the houses destroyed and damaged beyond ordinary repairs within the devastated area may be taken as the measure of the present shortage. This would approximate 410,000 homes. In Great Britain 450,000 would probably represent the actual need.

"Strange as it may seem, the conditions of the war have inspired among all classes of people a greater interest in humanity, and a greater regard for the physical and social conditions under which the masses of the population live. During the war the people of Great Britain and France became accustomed to the handling of large national problems by direct governmental action.

"The government has appointed a new official in connection with housing known as the Director of Propaganda. It will be his duty to arouse and maintain general interest in housing matters, and it is proposed that he work through a subordinate attached to each of the thirteen regional commissioners.

"Financial assistance to local authorities is to be calculated on a basis estimated to relieve these of the burden of any annual deficit in expenses of operation to the extent of the excess in the local tax 'rates' of a penny on the pound, assessable against the area in question. There is to be no donation by government toward the cost where the annual excess of expenditure over income would not exceed that amount. It is estimated that the capital expenditure by government during the three years of its proposed assistance would amount to £300,000,000 for England and Wales, based upon an average capital cost per house of £600, and the net deficit to be met out of public funds on

account of subsidies to Public Utilities Societies and contributions toward the cost of operation in the case of developments by the local authorities would amount to £6,500,000. Similar figures for Scotland would be £39,000,000 capital expenditure and £845,000 net deficit.

"With a view to meeting the demands of demobilized soldiers who want to acquire small agricultural properties, the government has introduced into Parliament two measures known as the 'Acquisition Land bill' for improving and clarifying laws governing the condemnation and acquisition of land for public purposes, and the 'Land Settlement bill.' The settlement bill not only contemplates the sale of land, but the operation of colonies under the supervision of the Department of Agriculture and Fisheries for the training of agriculturists and the forming of co-operative organizations for the distribution and sale of farm products.

Mr. Nevin, in his report on labor conditions, said that opinion in England in its attitude toward the labor problem was more active, responsive and alert than in the United States, but that the methods adopted by the public were less complicated and effective than similar agencies in the United States.

"The old idea of limitation of production by British workmen is being abandoned, and there is being substituted a better and quickened understanding of the necessity of enlarged productivity. Trade unions clearly recognize and openly advocate the economic effect of increased production, and there is no evidence of insistence upon the reinstatement of pre-war restrictions of output.

"Most impressive during the travels of our commission through Great Britain was the attitude of broad-minded representatives of trade unionism in seeking to establish cordial plans of co-operative action between employers and employees.

"Labor as a whole is more trustful of British employers than the government of the politicians. In considering Great Britain's industrial situation the American reader should remember that the government officially recognizes the legality of trade unionism, and there is practically no issue between employer and employed with respect to the enforcement of the principle of the closed shop."

* * *

The Lowest and Best Bidder

Under the system of competitive bidding, contracting is a guess proposition, says The American Contractor. There is nothing to prevent persons without experience or organization, but who can secure financial backing, from submitting bids much lower than those submitted by reputable contractors, and in a number of cases the lowest bid will be one that is below the actual cost of the work. Now enters the clause in specifications relative to the lowest and best bidder. How many engineers have ever been able to convince the purchaser that the lowest bid was not the best? Invariably the purchaser takes the position that as the contractor has furnished a gilt-edged bond, and as competent inspection has been provided for, why is it necessary to pay more for the work?

* * *

Building

Building is one of the most noble professions in the world. You are doing something useful—vital—for the world when you build good, honest, permanently substantial, architecturally attractive, really useful buildings.

HIPPODROME THEATRE, SAN JOSE
WEEKS & DAY } ASSOCIATE ARCHITECTS
BINDER & CURTIS }

The New Hippodrome Theatre, San Jose

By ERNEST N. CURTIS

THE new Hippodrome Theatre, San Jose, is situated on an ideal site, consisting of two lots that run through the block between First and Market streets. The lot facing on First street has a frontage of 30 feet and a depth of 123 feet. This strip connects with a large piece of property facing Market street. It can be readily appreciated that with this small frontage, as an entrance, on the principal street where property values are high and the auditorium proper on land that is comparatively cheap, the scheme is an admirable one.

In designing the facade, which is but 30 feet wide, the architects were furnished another interesting problem. As usual, for this type of edifice, a design that would attract attention was demanded. The entire facade is executed in cement plaster with ornamentation in soft blues and orange of varying shades. The large window is of amber cathedral glass. Flood lights hidden in the marquise illuminate the whole pile effectively at night.

The detail throughout the composition is suggestive of Spanish origin and lends itself exceedingly well to a colorful decorative scheme. Soft, delicate pastel shades predominate in the foyer with bits of lively color in the ornament. The proscenium is in more brilliant colors intermingled with gold.

The lobby and foyer occupy the strip of land facing First street, which is 30 feet wide and 123 feet deep. Along one wall is an inclined plane leading to the balcony. Floors of both incline and foyer are of cork tile. A mezzanine floor extends across the entire rear end of the auditorium under the balcony and is open, giving a view of the main floor. Lavatories and lounging rooms are located here as well as on the ground floor.

Exit passages 10 feet wide on two sides of the auditorium extend the entire length of the auditorium and open directly on Market street. Stage dressing rooms are built outside of the stage walls on either side over the exit passages.

The heating and ventilating is accomplished by means of vents, coils and fan in the basement beneath the stage and connect with ducts under the floor which, in turn, exhaust through mushrooms located under the seats.

A separate unit is installed in the balcony. An exhaust fan in the attic carries off the smoke as smoking in the balcony is permitted. The dressing rooms, foyer and offices are heated by direct radiation.

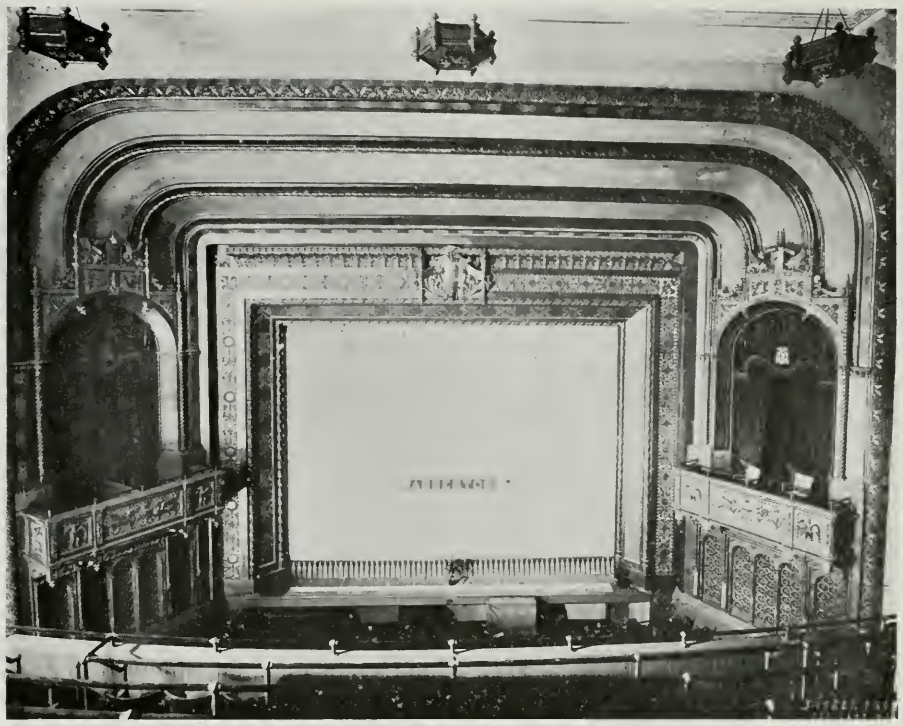
The entire building is constructed of reinforced concrete, excepting the roof of the auditorium. The concrete columns carrying the roof are 50 feet high, unsupported, and the problem was met by a series of buttresses over the exit passages. The balcony is carried on reinforced concrete cantilevers supported by a girder of steel and concrete. The entire stage construction, including roof, fly gallery and beam over the proscenium, is of reinforced concrete.

A few items of dimensions and capacity may prove of interest. The seating capacity is 2000 persons; auditorium proper, from front of stage, measures 80 x 97 feet; proscenium opening is 45 feet wide, depth of stage is 34 feet.

The architects were Messrs. Weeks & Day, San Francisco, and Binder & Curtis, San Jose. The K. E. Parker Company, San Francisco, was in charge of construction.

FOYER AND INCLINE TO MEZZANINE FLOOR, HIPPODROME THEATRE, SAN JOSE

LOUNGING ROOM, HIPPODROME THEATRE, SAN JOSE



PROSCENIUM ARCH, HIPPODROME THEATRE, SAN JOSE

VIEW OF AUDITORIUM FROM STAGE, HIPPODROME THEATRE, SAN JOSE

The Architect and The Draftsman

[A Communication to Architecture]

THE draftsman who went to war has failed to return to the drafting-board; they say he has found more congenial employment and better pay elsewhere.

The architect is busy again and needs him; he must have him, in fact, and a substitute cannot be developed overnight. What is he going to do about it? There is but one ready answer: "Get him back to the board." Does this mean that he should be looked up and argued with? That's hardly practicable. The answer is that a draftsman's job should be as attractive and as well paid and have just as many possibilities as similar jobs in any other line. If it is not so now it should be made so.

For a man to become a capable draftsman means a serious effort, years of hard work, often overtime work, and generally a real liking for the business. He should be able to do better for himself by using this knowledge and ability than in doing anything else. He will not leave it for something else if it gives him somewhere near the return his brothers in other lines are obtaining.

The fact that so many draftsmen have refused to return to the drafting-room after leaving the army is an indictment against architects, their offices, and the methods which architects have employed in dealing with draftsmen.

Is it possible that the draftsman job has not been as desirable, either from a point of view of pay, pleasant working conditions, or for future outlook, as the jobs of men in other lines of work? It is not only possible, it is and has been a fact since the writer can recall. It is not the fault of the draftsmen; they have been as good as other workers. It is distinctly the fault of the architects. They have failed to accomplish anything for themselves as a body, they failed in the conduct of their individual offices. They have lacked vision; they have not known the meaning or value of co-operative effort or of how to obtain individual effort. They have been selfish and short-sighted and have not allowed themselves or their men to extend to their fullest. The result of all this is that they have wasted a great percentage of their own work and that of their men. The returns for all have been small, and for all the outlook has been unpromising, the profession abused; and, worst yet, our architecture is the mirror in which all this discord and failure is reflected.

The architect first of all should try to get a distant view of himself and his office in relation to other business, he should try to see his office as an integral part of a business system or order such as he would wish to subscribe to, one that is based on honesty and fairness and congeniality. He should question whether his office is representative as a unit of such system. He should feel his responsibility. A million like him seeking to be right would go far to making this country the right sort of a place. He is one of the million.

Does he realize, and act as if he did, that the men working for him are of the same clay as he; that for every ambition that he has, for every aspiration, the man in his drafting-room has one to match; that as he finds it pleasant and stimulating to have his experience broaden out, so also does his draftsman, and that the one the same as the other become stifled when one day is just the same as the one before and the one after.

Now, having thought this over, he might call into his private office one of his draftsmen who has been diligent and tell him he is satisfied with his work, and for him to carry on, that he should not be ambitious to leave and go into business for himself unless he is willing to take a hundred chances, but that his ambition might better be in the way of making himself more useful and necessary to the office, and the office would, in turn, stand by him.

Having said this, how about outlining just what the office is going to do for this draftsman? Let him keep his job and give him a raise once in a

while? That's not enough. He has a little more coming to him than that. It's not just a case of a job with this sort of man. It's his life's effort he is giving. He has a right to expand this effort to his limit. Mr. Architect must realize this, if he wants the best out of his man, and act accordingly. He must think of his draftsman as his brother architect. That's the keynote. Some time the one is the better man, some time the other; there's no rule. His draftsman is working with him, not for him.

On the one hand, it is a plain business proposition. The architect allows his draftsman to do his best because it will pay him best. On the other hand, it is the decent thing to do. It is the "esprit de camaradie" in its best form.

There is necessary a better understanding between the architect and the draftsman; the draftsman to learn more of the point of view and the troubles of the architect and the architect to know his draftsman better. So long as either believes this is not worth while doing the profession will have a handicap; but if accomplished it will prove in just the same proportion a real help.

I am, yours very truly,

VICTOR EBERHARD.

MAGAZINER AND EBERHARD, Architects, Philadelphia.

* * *

Wide Roads Needed for Safety

WITH the increasing use of motor trucks on our highways we have daily evidence that at least an 18-foot pavement is required for the safety of passing traffic. In addition, suitable shoulders should be built along each edge of the paved surface so that any accidental or emergency deviation from the proper line of travel would not result in damage to vehicle and possible loss of life of driver or occupants, says the Concrete Highway Magazine.

During the night of July 11, an army motor truck carrying officers and men returning from Alexandria to Camp Humphreys, Va., bounded off the causeway leading from the bridge over Hunting Creek. Two officers and four enlisted men were killed and eleven others injured—three seriously. At the investigation conducted by army officers, the fact was brought out that had there been a well built shoulder from 5 to 8 feet wide, the driver would have had a chance to restore the balance of his car.

Shoulders had not been built along the edges of this 18-foot concrete pavement. Notwithstanding the fact it was wide enough to insure the safety of passing vehicles, any accidental swerving from the straight line of travel had a tendency to throw the machine off the pavement, and, once off, it would be exceedingly difficult to get it back on again; in fact, a vehicle having a high center of gravity was almost certain to overturn. This condition is dangerous even with a pavement of ample width, and amounts almost to criminal negligence in the case of a narrow pavement.

In addition to well-built shoulders such locations should be afforded the further safeguard of a substantial guard rail along the edge of the pavement, not so close as to be an obstruction to traffic but placed with a view to contribute an additional safety measure against such accidents as occurred on the Alexandria-Camp Humphreys Highway.

In selecting or deciding upon pavement widths, it must be remembered that to produce the same clearance for automobiles and trucks, a greater pavement width is required on curves. Economy often results and certainly greater convenience is afforded traffic if the highway is relocated where necessary so as to avoid curves, which are always an element of danger to traffic regardless of how carefully built and safeguarded.

OCEANIC BUILDING, SAN FRANCISCO
G. A. APPLEGARTH, ARCHITECT

Adding Three Stories to a Reinforced Concrete Office Building

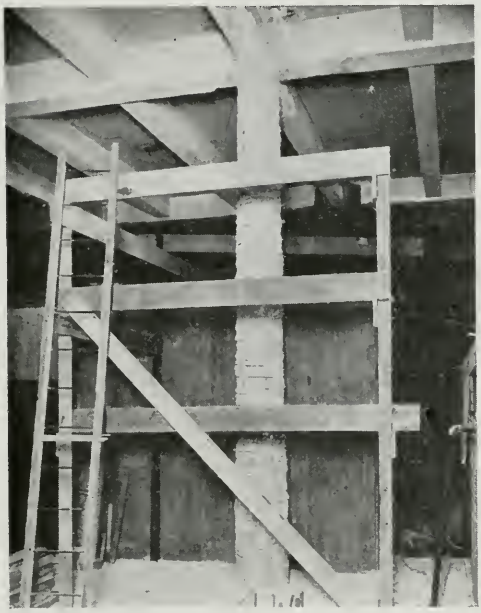


Fig. 1.—Showing fireproofing removed from existing column in Oceanic building, San Francisco, and ready to receive additional reinforcing steel to support three extra floors.

THE Oceanic building recently enlarged from five to eight stories and situated at Market and Battery streets, San Francisco, offered some interesting problems which the architect, Mr. Geo. A. Applegarth, and the engineer, Mr. T. Ronneberg, solved with gratifying results. The original building was five stories and basement and was designed by Messrs. Macdonald and Applegarth as a loft building. Walls, floors and roof slab are of reinforced concrete. When the Spreckles interests decided to occupy the entire building it was found that the five floors would not provide sufficient office space. Three more stories were required. Plans were therefore made for building the additional floors. To do this it was necessary to increase the size of the columns to take care of the additional load. Fireproofing was removed from the old columns as shown in Fig. 1, so as to permit the placing of additional reinforcing steel. This in place, (Fig. 2) new forms were built around the columns and fresh cement was then poured through holes cut in the floor slabs (Fig 3).

The building is considered one of the best built and most attractive office structures in the down-town section of San Francisco. The accompanying full page pictures show the building before alterations and after the improvements were made.

The exterior of the structure is faced with Medusa White Portland cement. A separate power plant has been built in the lot adjoining on the east, so the tenants are not dependent upon street service for heat and light. The building was erected by McLeran & Peterson.

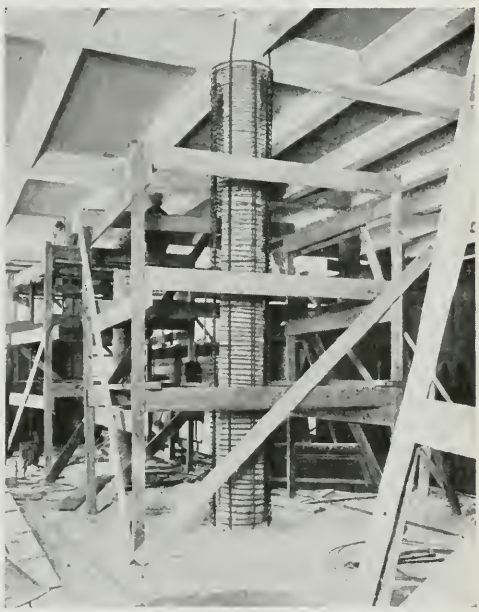


Fig. 2.—Showing additional reinforcing steel in place and ready for new form work.

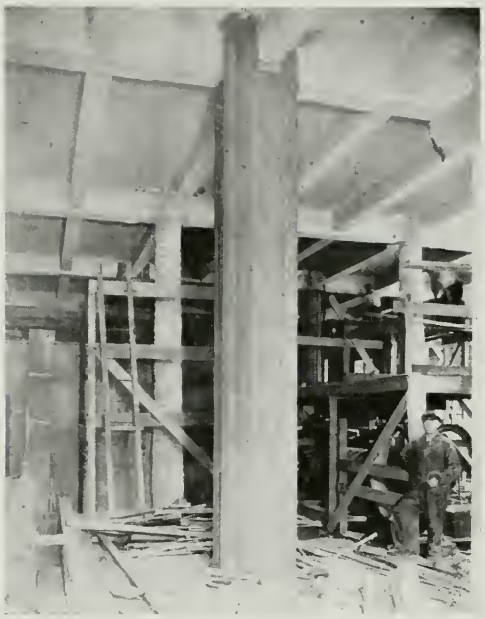


Fig. 3.—Showing finished column after removal of forms. Concrete was poured from floor above through holes cut in floor slab.

THE OLD TILLMAN & BENDEL BUILDING
Now the Oceanic Building, before Alterations and Additions.
G. A. Applegarth, Architect

California Regulations for Construction and Operation of Swimming Pools

THE Bureau of Sanitary Engineering of the State Board of Health of California has recently adopted regulations governing the construction and operation of public swimming pools. The rules are for the express guidance of designers, owners, managers and operators of such public pools in the State of California. Certain suggestions as to the suitable means of obtaining desired results are given. The following comprise the essential features:

All the water in the pool and applied to the pool shall be continuously safe hygienically. As a tentative standard a total bacterial count of 1,000 colonies per cubic centimeter on agar incubated at 37.50 C. and a B. Coli count of 1 per cubic centimeter is set for the pool water in any part of the pool, examined within 48 hours after sampling. All tests are to be made in accordance with the latest methods of the American Public Health Association.

All the water in the pool shall be continuously clean, and clear enough that bathers may be distinctly seen on the bottom of all parts of the pool. It shall be free of noticeable suspended or floating objects or particles, scum or sputum.

The pool walls shall be vertical, and walls, floors and surrounding walks shall be surfaced with white tile, cement (white or gray) or other impervious material, with as smooth a surface as each use permits, for easy cleansing. The swimming pool floors shall not slope more than 1 ft. in 20 ft. where the depth of water is less than 6 ft. Depth opposite diving stands and spring boards shall be at least 8 ft. 6 in.

The entire pool shall be surrounded by a raised concrete curb at least 2 in. high by 12 in. wide, serving as a clean space on which bathers may sit and as a check against walk drainage flushing into the pool. Walks may slope toward or away from the curb to a grating-covered drain channel, or drain outlets in the walk. Walks shall be at least 4 ft. wide in the clear. They shall slope at least one-half inch per foot toward the drains. All corners shall be rounded for ease in cleaning.

An arrangement of inlets and outlets giving the maximum uniformity of displacement of "used" by "incoming" water, and the maximum avoidance of short circuits or "dead" areas shall be used. Where a type of inlet consisting of a series of inlets scattered along one side of the pool not more than 10 feet apart, and outlet similarily scattered on the opposite side, are not used, it must be with the specific approval of the State Board of Health.

A scum gutter on all four sides of the pool, recessed into the side wall and designed to prevent bathers from having easy access with fingers, hands, arms, feet or bodies, shall be provided. Drainage facilities from such gutters shall be of such size and spacing that all overflows and splash shall be promptly carried away into a sewer and not returned to the pool or circulating system. Gutters or drains along the top or side of the wall, open and accessible to bathers, will not be permitted.

Gutter drainage, wash water from filter and emptyings from the pool shall be considered as sewage water and shall be disposed of accordingly.

Sand beaches, earth walks, board walks, lawns and the like, which may contribute contamination or objectionable filth to the pool or its premises, shall not be permitted.

Spectators and persons not dressed for bathing shall not be allowed on the walks used by bathers, and bathers who leave the premises and return with suits or bodies soiled by sand, earth or objectionable contamination shall not be permitted to re-enter the pool while in this condition.

Plunge rooms, dressing rooms, shower rooms, toilet rooms, lavatories, hallways, etc., shall be commodious, well lighted, well ventilated and clean. Floors for dressing rooms, hallways, toilet rooms, lavatories and showers shall be of tile, concrete or other impervious material, sloping at least one-half inch per foot to nearby grating-covered drain channels or floor drains, except that floors for dressing rooms and hallways may be of wood, provided they be treated to keep them impervious and clean.

There shall be at least one shower head, provided with soap, for each 30 dressing rooms. Shower rooms shall be easily located from every dressing room.

There shall be at least one toilet room for each 30 women's or children's dressing rooms and at least one toilet room for each 60 men's dressing rooms. There shall also be urinal spaces to accommodate at least 5 per cent of the capacity of men's dressing room. Urinals shall be of a type which will prevent splash of urine upon the floor or feet of bathers, and floors opposite shall be free of any evidence of foulness. Toilets and urinal rooms shall be located for ease in finding from every dressing room and from the pool, and shall be distinctly marked. Outdoor toilets shall be screened against flies and constructed according to good sanitary practice.

Where sanitary drinking fountains are provided they shall be of an approved type.

Equipment shall be provided for the rescuing and reviving of drowning persons, including life buoys, life hooks and rope.

At least one attendant or life guard shall be on duty at pools to which admission is charged at all times when in use, who shall be familiar with the rescuing and reviving of persons apparently drowned.

Bathing suits and towels shall be thoroughly cleaned and sterilized after each use.

The general appearance of all the premises shall be one of cleanliness, airiness and sanitation. All surfaces possible shall be painted with light colored paint.

The management shall keep on file a record of daily attendance and operations as prescribed in each individual instance, which shall be submitted to the Bureau of Sanitary Engineering on demand.

The management shall keep posted conspicuously in its office and in all dressing rooms such regulations governing the conduct of bathers as may be issued from time to time by the State Board of Health, and shall enforce the same strictly.

It shall also keep posted conspicuously near its office or entrance to the pool a report of the latest bacteriological analysis of the water in the pool, as furnished by the Bureau of Sanitary Engineering. False and misleading claims relating to any sanitary condition or feature about the pool or premises shall not be displayed.

* * *

World's Largest Concrete Building

The Chicago mail order firm of Sears, Roebuck & Company has just awarded contracts for what will be the largest reinforced concrete building in the world, excepting only those erected by the government during the war. It will stand on a forty-acre tract fronting on Roosevelt boulevard in Philadelphia, and will cover a ground space of 780 x 440 feet. The plant will have a total floor space of 1,550,000 square feet and will represent an investment of $7,500,000. The designs and plans of the building were approved by the Philadelphia art jury which has jurisdiction over all buildings on the new parkway which is being cut across the city of Philadelphia.—Manufacturers News.

Engineer's Report on Santa Monica Pier Failure

The value of reinforced concrete construction for sea wharves is not in any way impaired by the failure of the reinforced concrete municipal pleasure pier at Santa Monica. That fact is emphasized by the report of the commission of engineers employed by the Santa Monica city commission to investigate the condition of the pier. The Santa Monica pier was built ten years ago and it was the first important structure of its type to be erected on the Pacific Coast. It was regarded by many engineers at that time as an experiment. The action of sea water on reinforced concrete was not then thoroughly understood; nor had the methods of construction been sufficiently studied or perfected.

A very careful investigation of the condition of the pier was made by the commission; also a thorough study of the causes for its failure, the latter involving much research on the general subject of the effects of sea water on reinforced concrete. As a result, the report is a valuable contribution to engineering literature.

FOLLOWING is the text of the report of the commission of engineers, composed of the firms of Quinton, Code & Hill, Leeds & Barnard and Olmsted & Gillelen of Los Angeles, to the city commission of Santa Monica on the condition of the reinforced concrete municipal pier, causes for its failure, and recommendations for its reconstruction, submitted under date of November 5, 1919:

Pursuant to our contract of September 2nd, 1919, with the City of Santa Monica, we rendered to you on September 4th, 1919, our preliminary report, recommending the discontinuance of the use of the Municipal Pier by the public, pending completion of detailed examination and final report.

We have completed this detailed examination and made a diagram, which is hereto attached as Exhibit "A," showing thereon the condition of every part of the concrete substructure, and have to report as follows:

Present Condition

Of 42 bents containing originally a total of 150 piles, examined by diver, the condition was found to be as follows:

Under low water mark:

3 piles were gone completely.
3 piles were practically gone.
60 piles were rusted so badly as to show that oxidation of the steel had set in.
30 piles were cracked, showing that disruption was in an advanced condition.
54 piles were apparently still serviceable, as most of these were cased with iron and concrete.

Above low water mark:

3 piles were gone completely.
3 piles were practically gone or useless as bearing piles.
91 piles were cracked in two or more places.
33 piles showed one crack.
20 piles showed no visible sign of deterioration.

It was not considered necessary to spend any more money on examination of the piles under water, as the above enumerated defects show plainly to our satisfaction that the piles are so badly deteriorated that the pier as a whole should be condemned.

In addition to the above 42 bents which were examined under water by diver, and above water by ourselves personally by means of boats, the following 16 bents, at the shore end, containing 48 piles, have been examined by us at time of low water and the following defects noted:

46 piles were cracked in two or more places.
1 pile showed one crack.
1 pile showed no visible sign of deterioration.

Reference is invited to Exhibit "A" hereto attached. Thereon is shown in detail the condition of each pile and other part of the structure, as far as examination could be made without unwarranted expense to the City of Santa Monica.

As the entire structure rests on piles alone, the failure of the piles means the failure of the pier. Considered as a whole, the pier is in a very dangerous condition, and any great winter storm is liable to wreck it wholly or in part. On no account should the public be allowed to use it further, as many parts of it are liable to fail at any moment.

Cause of Present Condition

The underlying cause of the present condition of the pier was, in our opinion, porous and permeable concrete. Because of this permeability, the salt water has penetrated the concrete, producing two results: the chemical disintegration of the concrete itself and the mechanical fracture of the same as a consequence of the expansion of the reinforcing steel due to its corrosion. The final result of this disintegration and fracture of the concrete is, of course, such a destruction of the strength of the piles and other parts of the structure as to render them unable to bear their proper loads.

An excellent description of the process of the chemical disintegration of concrete by sea water is given by Messrs. Wig and Ferguson in the second of their five articles on the effect of sea water on concrete, Engineering News-Record, October 4, 1917, Vol. 79, No. 14, page 641. From this article we quote the following:

"The reason is that as cement hydrates over a period of months in the interior of a mass of concrete where not exposed to carbon dioxide, the lime which is freed as the cement ages is changing from the amorphous to the large crystalline form. On account of its relatively slower rate of solution in water than amorphous lime this crystalline form, which is a hydroxide, does not react appreciably with the limited amount of carbon dioxide present. When the sea water comes in contact with the lime in its crystalline form, the lime is dissolved and passes into solution largely as calcium sulphate, the magnesium salts of the sea water being precipitated as magnesium hydroxide, which is practically insoluble. The dissolving of the uncarbonated lime will continue until the cement is completely disintegrated."

A clear and sound explanation of the corrosion of the reinforcing steel and the fracture of the concrete is presented by Messrs. Wig and Ferguson in the third of their above mentioned articles, Engineering News-Record, Vol. 79, No. 15, page 692. From this we quote as follows:

"Undoubtedly the real cause of the trouble is the accumulation of salts in the pores of the concrete above the water line by capillarity and evaporation, and the absorption by the concrete of the air carrying very minute particles of sea water. Moisture in this form is transported by the wind a much greater distance than is usually believed. This is shown by the presence of chlorine in the form of sodium chloride. If the moisture from the sea were simply in the form of water vapor from evaporation there would be no salt found in the atmosphere. The studies made on this subject by the United States Geological Survey indicate that finely divided salt spray from the ocean is carried by the air a distance of many miles inland.

"Chlorine and oxygen together form a very active corroding agent. Of course, this has long been known, but what we did not before appreciate was that the salt air could penetrate concrete to anything like the depth it really does.

"When steel corrodes it occupies about twice its previous volume. The expansive force thus developed by metal embedded in concrete is enormous, and the concrete is soon stressed sufficiently to cause cracking."

Messrs. Wig and Ferguson make particular note of the fact that this corrosion and fracture takes place above the water line, and this fact is borne out by the conditions in the Santa Monica pier case.

Our examination revealed that while the chemical disintegration of the concrete itself took place, in general, under water, or between high and low tide, the cracking of the concrete along the lines of reinforcement took place almost entirely in the caps and struts and above high water in the piles.

This cracking, as though the result of a wedge-like action at the reinforcing rods, is so general throughout the structure above water that it points to general corrosion of the metal due to one or both of two causes—permeable concrete, as indicated above, or electrolysis.

The appearance of some of the piles would indicate that electrolysis may have taken place in the earlier life of the pier. A careful examination during October, 1919, with a millevoltmeter showed that there was a very slight difference of potential between the sewer discharge line on the pier and the reinforcing steel in the piles. This difference fluctuated synchronously with the stopping and starting of cars on the Pacific Electric tracks nearby. No electric current which would cause electrolysis, however, could be detected in the sewer discharge line. Whether the electrical machinery in the pumping and treatment plant at the shore end of the pier was running or not, the results were the same, irrespective of movement of street cars. Any electrolysis, if it did occur, has now almost, if not entirely, ceased and probably for two reasons: first, the adoption of improved bonding methods by the electric railway, since the pier was built, to prevent electrolysis, and, second, the corrosion of the steel increasing to such an extent as to form an insulation of oxidized metal about the reinforcement. Although the nature and

the degree of the corrosion, and the even yet detectable difference of potential, might furnish slight reason for thinking that electrolysis had something to do with the initial fracture of the concrete, we are of the opinion that the most potent cause of the corrosion was the porous, permeable concrete which allwed the salt sea air to penetrate to the steel.

An examination of many examples of concrete work from Santa Monica to Redondo shows that in many instances the same destructive action is taking place where there is no reason to expect to find electrolysis and where the concrete is not directly in contact with salt water. Many porous concrete works such as lamp posts and railings are found to be failing solely as the result of their exposure to salt sea air. As indicated later in this report, dry mixed concrete, such as is commonly used in such "artificial stone" lamp posts and railings, is quite as porous and permeable as concrete mixed too wet.

It is clear from the above that the cause of the present condition of the pier was permeable concrete. This permeability can result from several causes, any or all of which may arise in the absence of the most rigid and competent inspection and careful and conscientious workmanship, or from improper design.

In the light of the present day knowledge, permeable concrete may result from the use either of too much or too little water. Numerous experiments have demonstrated this.

The concrete may be so placed in the forms that there is a separation of materials and consequent alternating dense structure and rock pockets with a large percentage of voids. Forms may be so poorly designed as to be leaky and so allow the loss of the cement, leaving an unfilled mass of aggregate.

Reinforcing steel may be placed too close to the surface to permit of its being adequately covered even with the most dense concrete obtainable.

Forms may be removed so awkwardly and piles may be handled so roughly that the "skin" of lime carbonate is broken and so access is given to the interior concrete for the salt water.

Many if not all of these facts have become known as the result of the experience and experiments of the last few years and were not available to the designers of marine concrete construction a decade ago.

In the light of our present information it is realized that the reinforcement should have been more deeply imbedded, but at the time the pier was designed any engineer would have said it was quite sufficiently covered.

The diary of the inspector records that beach sand and gravel were used in the concrete. This we believe to be an unsafe practice in reinforced concrete construction, for the salt contained therein facilitates the corrosion of the mental reinforcement. Moreover, because of the sorting process of nature in the formation and deposit of beach sand, a very uniform, ungraded product results, which requires the use of an excessive amount of cement to prevent getting a very lean porous mixture. Clean sand and gravel or crushed rock should be used and so graded that, with the cement and a proper amount of water the least volume of concrete will be produced with a given quantity of ingredients. This will produce a dense impermeable concrete.

It should be needless to say that any skimping of the cement required for a properly proportioned mixture would result in a poor and permeable concrete.

From the inspector's diary, it appears that, at least at first, and perhaps throughout the course of construction, some difficulty was experienced in getting satisfactory materials and tight forms; as for instance note entries in diary as follows:

"Saturday, March 28th (1908), Mr. James agreed to accept good beach gravel for the sand part of the piles.

"Wednesday, April 1st, 1908. . . . Rejected sand delivered for piles. Showed Anderson on the beach what gravel and sand would be accepted.

"Friday, April 3. . . . Rejected one carload broken stone not being small enough for piling.

"Friday, April 10. . . . . Two laborers breaking up piles Nos. 1-2. Good except for washing out on account of leaking molds.

"Saturday, April 11. . . . Quit work 2 p. m., casting piles on account of pile forms leaking. Decided to stop until new forms could be made. Rejection of forms on Pile No. 5."

It would appear also from the diary that the workmanship and manner of handling of the piles left something to be desired: as for instance note diary:

"Wednesday, May 13. . . . Resetting piles 1st, bent not located right.

"Thursday, May 14. . . . Pile No. 9 cracked 8 feet from bottom, sunk 10 feet 6 inches. Pile No. 10 cracked 12 feet from bottom. Sunk 13 feet 0 inches, time 2 hours. Pile No. 11, cracked 9 feet 6 inches from bottom.

"Friday, May 15. . . . Pile No. 13 down 14 feet 6 inches, cracked 11 feet 6 inches from bottom.

"Monday, June 1. . . . Piles Nos. 31, 41, 32 cracked in raising from bed.

"Monday, July 13. . . . South strut bent, No. 3 cracked sea end.

"Tuesday, July 14. . . . In hoisting from wagon Pile No. 42 dropped by breaking of tackle. Cracked, rejected. Pile No. 25 condemned, pulled up partially for extending. Portion made yesterday rejected.

"Saturday, July 18. . . . No. 46 bent 16 south 20 feet 6 inches, cracked 28 feet above bottom.

"Monday, July 20. . . . Broke one pile account tackle breaking in hoisting."

It is noted that on Saturday, August 22, work was stopped on account of heavy swell and on following Tuesday no work was being done on account of heavy swell, showing that the piles, many of them probably insufficiently supported, were subject to a heavy swell for four days. An examination made the fourth day showed 12 or 13 piles out of the last 21 driven to have been broken.

Succeeding days' records show that some of these piles were pulled and in one case at least it is particularly noted that the pile was replaced. See diary as follows:

"Monday, Aug. 31. . . . Pulled pile No. 81, bent 26, No. 3 north, found cracked 16 feet to 19 feet above bottom.

"Tuesday, September 1. Pulled pile No. 80, bent 25, No. 3 north, found broken. Replaced with 18-inch pile. Set 18 feet 0 inches. Found north pile bent 15 had settled about 2 inches, cracking girder and two struts."

Further perusal of the diary shows that faulty work seems to have occurred at intervals throughout construction and though it is noted that some of it was removed or repaired, it seems probable to us that a great deal of it remained in the structure.

Friday, February 12, 1909, another storm occurred and note was made of numerous cracked members from the shore to bent 47, as a result thereof. Note was made later of considerable time spent "cutting out and refilling" cracks in girders and struts.

Chemical Analysis and Absorption Tests

Appended hereto are the original analysis of samples of concrete taken from the piles above and below water as noted, made by Raymond G. Osborne. The chemical analyses establish very conclusively the fact that exactly the action indicated by Messrs. Wig and Ferguson has taken place in concrete taken from the Santa Monica Pier under water. The disintegrated concrete lost 23 per cent more lime than the good concrete and gained over 9.5 per cent of magnesia, in the form of magnesia hydroxide.

The absorption test made by Mr. Osborne on pieces of concrete taken from the pier where chemical disintegration had not taken place, but where piles had been fractured by the corrosion of the metal reinforcement, showed an absorption of water by weight of from 6 per cent to 7 per cent of the original weight of the specimen. A single test made on a more porous piece of concrete showed an absorption of about 12 per cent by weight.

We have tested some pieces of the concrete taken from the pier in some places where failure had occurred, and found that the concrete absorbed water to the extent of between 20 and 25 per cent of its volume. This absorption is about the same as that of common brick. Such concrete could not be said to be dense, and unless perfectly protected by an impermeable coating of rich mortar, would naturally allow sufficient absorption of the sea water to reach the steel.

Conclusions

In consideration of all of the above facts and observations we believe we are fully justified in concluding that the prime cause of the failure of the pier was the permeable concrete resulting from unskilled or poor workmanship and improper selection and use of materials. A possible contributing cause was the occurrence of two quite severe storms during construction, which cracked many members of the structure, rendering them still more liable to attack by the salt water and air. Electrolysis may have accelerated the corrosion of the reinforcement in the earlier days of the pier, but we do not find evidence of its present operation.

Feasibility of Repairing Present Structure

It is possible to repair the present structure by replacing, bent by bent, the concrete substructure in its entirety. Whether this is economically feasible or not may be best determined by considering the probable cost of doing such repair work as compared with wrecking the pier and building an entirely new one. For this purpose we have prepared in conference with William Ledbetter & Co., a contractor experienced with this class of construction, the following estimates:

A. Estimated cost of removing present concrete piles, caps and struts and replacing with concrete, saving present deck:

Installation and removal of plant	$ 2,800.00
Wrecking of present concrete piles, caps and struts	16,550.00
New concrete piles	69,750.00
New concrete caps and struts	22,050.00
	$111,150.00
Engineering, superintendence and contingencies, 20%	22,230.00
	$133,380.00

B. Estimated cost of removing present concrete piles, caps and struts and replacing with creasoted wood piles and wood caps:

Installation and removal of plant	$ 2,800.00
Wrecking of present concrete piles, caps and struts	16,550.00
New creosoted piles	31,940.00
New timber caps and struts	9,512.00
	$ 60,802.00
Engineering, superintendence and contingencies, 20%	12,160.00
	$ 72,962.00

C. Estimated cost of constructing entirely new pier of same general design as present pier $200,000.00

Advisability of the Use of Reinforced Concrete in the Event That New Construction Is Undertaken

Before expressing an opinion on this subject, we consider it necessary to state a few facts which have an intimate bearing on it.

Much has been written in later years on the subject of "the action of sea water on concrete," but the consensus of opinion seems to be that reinforced concrete can be made which will successfully resist the action of sea water, but to accomplish this the concrete must be made as dense as it is possible to make it, and protected from serious rupture of its surface where exposed to the direct action of the sea water or salt air.

The quantity and quality of the water used in making the concrete has a most important bearing on the density as well as the strength of the concrete, and on no account should sea sand or sea water be used in its manufacture.

The selection of the materials and the mixing and placing of the concrete must be done under the supervision of a competent engineer, by conscientious and skilled workmen, and with great care.

In the making of a reinforced concrete to be exposed to the action of the sea water and sea air, the personal equation of the employee has an important bearing. A careless or incompetent workman can easily ruin a batch of concrete, and an unscrupulous one would have no hesitation about dumping it in with the other batches, and thus ruin a pile, or other member of the structure. Good materials and unremitting attention to the mixing and laying in the forms, is the price of good concrete for use in sea water.

In the case of structures involving the use of long reinforced concrete piles particular care must be taken to avoid any considerable flexure of the piles in handling, or fine hair cracks will be formed which will permit the penetration of salt water to the reinforcement. It has been well established (Hool & Johnson, 1st edition, page 271), that concrete reinforced with steel does not elongate under tensile stress to any greater extent before cracking than plain concrete. This must be taken into consideration in designing piles.

It must be borne in mind that much of our knowledge of the way to make concrete which will resist the action of sea water has been gained since this pier was built, and it is far from our intention to cast reflections on any one in connection with its construction, for we believe that it was well designed and constructed under considerable difficulties. Our only finding is that the materials of the concrete appear to have been not well selected, and not combined in the proper proportion with the proper amount of water to make a sufficiently dense concrete to prevent the sea water from reaching the imbedded steel.

In consideration of the above facts and having in mind the difficulties attending the making of a structure impervious to moisture, particularly in replacing the present piles and other concrete substructure without removing the deck, we are of the opinion that it is inadvisable for the City of Santa Monica to attempt to reconstruct the Municipal Pier in reinforced concrete.

Other Points Bearing on the Condition of the Pier

Regarding the claim that more might have been done to keep the pier in proper condition, we have to say that in our opinion every reasonable effort has been made to maintain the pier in a safe and usable condition and that nothing could have been done at any time since the structure was built to have prevented its present condition or appreciably prolonged its life.

Claims that the building of the wooden structure to the south of the pier had anything to do with the present condition of the pier are, in our opinion, without foundation in fact.

Recommendations

In conclusion, we would recommend that the further use of the Municipal Pier be prohibited and that steps be immediately taken looking to the replacement of the present concrete piles, caps and struts by creosoted wood piles and timber caps and struts, retaining the present deck structure. Such a substructure should have a life approximately equal to the remaining life of the existing deck structure, and so the greatest possible use of the original investment consistent with public safety will be made.

* * *

Mr. Gomper's Mistake

MR. SAMUEL GOMPERS recently stated that although union workers in America total only 4,500,000, they and their families represent 24,000,000 people. He said that each family numbers about five people, so he multiplied the 4,500,000 by five, and then added 1,500,000 for good measure, to get the 24,000,000. In multiplying by five, he tacitly assumed that each worker is the head of a family, but, as a matter of fact, there are only 2.6 people to each worker, which means that there are two workers to each family. In "Vocational Guidance," by Pieffer, the following percentages, based on the U. S. census, are given:

	Per cent.
Non-workers (too young or too feeble)	39
Home makers	23
Workers	38
Total	100

Workers:	Per cent.
Agriculture	30
Manufacture, mechanical and mining	23
Domestic and personal service	16
Trade and transportation	13
Professions	4
Idle	14
Total	100

Assuming that Mr. Gompers is correct in stating that there are 4,500,000 union workers, that is only four per cent of the population. Since there are 2.6 people per worker (include the worker), only 4×2.6 or 10.4 per cent of the total population are members of families that belong to unions. This is about half what Mr. Gompers erroneously claims the percentage to be.

Since barely one person in ten in America is a member of a family that is represented in any labor union, it follows that there is small likelihood that labor union threats will intimidate many legislators. Consequently it is a foregone conclusion that anti-strike laws of some sort will soon be passed by congress, and later, by most of the states. The American public has about reached the limit of its patience, and talk about the inalienable right of free men to quit work is not meeting with a very kindly reception these days. "Free men" all Americans are, but our freedom is and always has been limited. Actions that harm one's fellowmen are not long permitted, even under the guise of freedom. Try disturbing the peace by loud shouting at night, if you want to test the extent of your freedom to use the lungs that God gave you.—Engineering and Contracting.

To Stop Elevator Accidents

THE article "To Stop Elevator Accidents," which was reprinted from the Literary Digest in this magazine in October, has brought forth considerable discussion and a number of letters to the editor. One came from Mr. Louis Resnick, director of publicity of the National Safety Council, Chicago, who requests publication of Mr. Dana Webster's paper, "Elevator Hazards Affecting the General Public," read before the Eighth Annual Congress of the National Safety Council in Cleveland, Ohio, October 3. Mr. Webster's paper is printed below, in part:

Before making any remarks on the safety of elevators, it might be interesting to cover briefly the gradual development in the manufacture of mechanical lifting devices.

Lifting devices were undoubtedly used by Julius Caesar, as far back as 256 B. C. as history mentions their lifting animals from the dens to the arena in the Coliseum of Rome. About the middle of the Nineteenth Century, platforms or cable hoisted elevators were first installed in New York and Boston, but were not provided with any kind of safety devices, and strange to say you can find a few elevators without safety devices at the present time.

A few years later elevators were equipped with safety devices of such type that it was necessary for the hoist cable to break before the safety could actuate. There are a great many of this type of safety in use today, but with the introduction of high speed elevators which were required to meet the demands of the public quite naturally it necessitated much better type of safety apparatus and a multiplicity of cables.

Accidents could and did occur from over-speeding elevators caused by disarrangements of the controlling apparatus, and it became necessary to provide safety devices that would actuate should the elevator speed increase beyond a predetermined number of feet per minute.

The most essential elements of safety are the prevention of excessive speed from any cause, the over-running of the limits of travel at top and bottom, safe protection at the landing entrances to the elevator, and a regular examination of the cables and all parts of the elevator equipments.

The early type of the safety device was designed to stop the car instantaneously. They served the purpose satisfactorily for slow speed, but were not adequate for the higher speed of 400 to 700 feet per minute. It, therefore, became necessary to provide a safety device that would stop the car with an easy and gradual stop. This is accomplished by the friction clamp safety which is actuated by a safety speed governor, usually set to trip at 40 per cent above regular speed. This governor will act should the hoist cable break, allowing the car to drop, or should the car over-speed from some defect in the machinery after the governor trips and the car has dropped far enough to take up the clearance of the safety jaws. The jaws are forced hard against the guide rail like a vice, and the car will continue to slide until the friction is enough to stop the car entirely. The distance the car will slide after the safety takes hold, depends upon the load; but the farther the car slides the tighter the safety grips the rail. Usually a car will drop about six feet after the governor trips and clamps the governor cable.

The machine of all power operated elevators should be equipped with automatic limit stops; that is, a device that will stop the elevator at the top and bottom limit of travel, regardless of the operator.

On Drum machines, the Automatic Limit Stop should be built with and made a part of the machine.

On Hydraulic elevators, the Automatic Limit Stop should consist of a Cut Off Valve, either in the to-and-from pipe, or in both the supply and discharge pipe.

On Traction type of elevators, the Automatic Limit Stops must be located in the hoistway, and the power cut off by the travel of the car. As there is more or less slippage of the hoist cables on the drive sheave, a machine automatic would not be dependable. In addition to automatic limit stops on electric elevators, there are hoistway limit switches located so that should the car travel a certain distance by the automatic limit stop, the car would open a switch, thus cutting off the power and stopping the machine.

The early types of passenger elevators—and in fact most elevators up to the present time—are provided with landing doors equipped with a catch located on the inside so that the door can only be opened by the operator. The operator, however, in order to make speed—and the public is partly to blame for this—starts the

elevator before the door is closed, and quite often the door would not fully close and latch, thus providing a very dangerous condition. Many persons have opened the door when finding it ajar, and looking in the hoistway have either fallen or have been knocked down the hoistway by the car and severely injured or killed. I might say right here that statistics show that 85 to 90 per cent of all elevator accidents occur at the landing doors. Therefore, it became necessary to provide the landing doors with a locking device that would prevent the doors from being opened, unless the car was at the landing; also to prevent the car from being removed away from the landing until the landing doors were closed. This is termed the Interlocking Device, or Interlocks for Landing Doors. While I believe all landing doors of passenger elevators and gates for freight elevators should be equipped with interlocks, I am sorry to say that at the present time only a small percentage of elevators are equipped with this device, although they are becoming more and more in general use.

The Cables are the most essential parts of the elevator equipment, and their number and size should be equal to the load with a good factor of safety. The sheave should be of ample size and placed in alignment to prevent chaffing of the cables on the sides.

Great credit must be given to the manufacturers for the high state of perfection these devices have brought. This fact must be admitted when considering the few accidents on elevators, compared to the large number of passengers carried. Statistics show that 10,000,000 passengers are carried in the Borough of Manhattan daily, and it is said that this number exceeds the number of passengers that ride on all the surface, elevated, and subway cars; in other words—more people ride vertically than horizontally.

A great many elevator accidents are not due to faulty design in construction, machinery, or safety device, but to the carelessness of the injured party. It, therefore, becomes necessary for the city or state to enact ordinances and laws regulating the construction of elevators, and enforcing their equipment with effective safety devices, in the interest of accident prevention; that is to say—to prevent a person from being injured by his own carelessness, and also by the carelessness of the operator.

Are the safety devices kept in proper condition? is one important question. The only way this can be accomplished is by having the elevator regularly inspected by a competent elevator inspector, who should inspect all the different safety devices, machinery, cables, etc., in fact, everything pertaining to the elevator. The landing doors should be tried to determine whether they can be opened from the outside. The car safety device should be tested to be sure that it would actuate and hold the car from falling, should the cable break. The automatic limit stops should be tested so as to be sure the car will not over-run and strike the overhead beams or bumpers. The slack cable device should be tested to be positive the power would be cut off, should the cables slacken. The brake should be examined to be sure there is no slippage. The cables should be examined very carefully for defects, as there is no part of an elevator that requires the exercise of more good judgment than the examination of the cables. It is just as essential that the safety devices, and all parts of the elevator, be kept in good working order, as it is that they should be installed in the first place. After an inspection has been made, the owner should proceed immediately to install safeguards and remedy any defects reported.

The elevator should be oiled and greased regularly by the engineer and looked over carefully for any defects, and not wait for an inspector to make a thorough inspection, and oftentimes the engineer will discover some little defect which if fixed immediately may avoid a serious accident.

There is another feature that I wish to mention before closing; that is the elimination of mirrors, in fact all glass, from the passenger cars (except the electric light bulbs), not only because of the fact that they are liable to cause injury to passengers by getting broken, but also because of their attraction, which results in passengers failing to notify the operator promptly as to their destination. This necessitates a stop between floors, and a trip back to let them off. They also have a tendency to retard the loading and unloading of the cars.

Mr. W. D. Hoffman, of the Otis Elevator Company, answering the article in the Literary Digest, sent the following letter to Mr. E. M. Horine, vice-president of the National Association Building Owners and Managers:

Replying to your letter of recent date, with enclosed copy of article from "Literary Digest," allow me to say that the man who wrote this is either trying to introduce an antiquated safety device, or else he knows mighty little about elevator practice.

To begin with, the most serious accidents are not from falling of the "cages," as he expresses it. In fact, very few accidents result from this cause. He goes on and describes the safety catches on freight elevators as operating in racks at the side of the shaft. This type of safety has not been used in the last 15 or 20 years by any of the regular elevator manufacturers. The safety device is by means of a clamp on the rails which is operated by a governor, and this device very seldom fails to work. In fact, in 10 years I have not known an Otis elevator in this territory to fall through failure of the safety device, and I have known of very few of other makes to fall, as described by this author.

He also devotes considerable time to describing how a cable breaks. Under the present inspection system, there is no excuse for a cable being permitted to run long enough to reach a dangerous point, and the point where a cable breaks is not confined to any particular section of the rope. In fact, while we have had very few cables that actually broke, I can not recall where the breaking point was confined to any particular section.

He speaks also of the drum getting loose on the shaft. No modern elevator manufacturer ever keys a drum to the shaft, as they are bolted directly to the gear, and I doubt if there ever has been a case where the teeth of a bronze gear were broken so that the elevator would fall.

The accidents that we have on elevators nowadays are mostly confined to people getting hurt on entering and leaving the car, due to their own carelessness and that of the operators, and we try to overcome this by arranging the cars so they can not be started unless the doors or gates are closed. Of course, it is more difficult to accomplish this with a freight elevator which everybody uses than with a passenger elevator where they have a regular operator.

So far as the air cushion is concerned—this is a relic which is almost entirely discarded. In the Woolworth building is the biggest example of the air cushion. I think it cost between one-half and three-quarters of a million dollars to equip these elevators with the air cushions and they now wish they had not installed them. I have dropped on a good many elevators in test, but I do not believe that I would want to go 130 feet onto an air cushion, and I seriously doubt if anybody else ever did it and came out smiling, as the author describes.

There are many reasons why an air cushion is defective. In the first place, it has to be made without any doors or entrances in order that these will not be blown out, provided the car does fall. In the second place, it is rather annoying in the operation of the car. Third, the car floor has to be built extremely heavy and then it is rather doubtful whether it is strong enough to stand the shock of stopping, if it drops any distance.

I think the gentleman who wrote this article is working more on theory than he is on practical experience, and I doubt if any elevator manufacturer would seriously recommend the air cushion in place of the modern safety device.

* * *

Union of Draftsmen

Declaring that high officials of the American Federation of Labor are responsible for "tendencies to threaten the foundations of the government of the United States," a union of draftsmen employed in the Treasury Department has withdrawn from the American Federation of Labor. The movement is part of a general campaign to secure withdrawal by all government employes unions.

* * *

Oh, Dam!

A damsel fell from a damaged dam
Six miles from Amsterdam.
You may surmise her clothes were damp
And that she damned the dam. —Ex.

* * *

"Memories, Memories"

"I see they are making shingles out of cement now."
"Then I recall my wish to be a boy again."—Boston Transcript.

The Impregnable Position of the Architect

IT has been said that the architect is trusted to a greater extent than the physician is trusted—because the former is trusted with the expenditure of large sums of money, yet his spending is seldom or never questioned by the client. The physician is trusted with one's life, it is true; but there is no record of how trustful their patients would be if it were (in this day and age!) a question of cash instead of life.

However this may be, the point is that architects enjoy the highest confidence of the public, when it concerns the decisions regulating expenditures or selection of materials or specialties that are to go into a structure. The architect's integrity is seldom or never a matter of debate. He is taken at his own valuation, as that of an absolutely disinterested party whenever the money part of a building is concerned. The only question that may ever have been raised against him was that in some of his designs he has aimed to create prestige and glory for himself rather than to produce a building best suited to the owner's needs.

* * * *

But as to his say-so regarding just what was to go into the work, or the amounts to be spent, his word is taken to be final, and his approval is acquiesed in with little or no questioning as to his motives. He is not suspected of having ulterior or mercenary motives guiding him in selection or naming of certain materials or equipment.

This high standing, well earned by the architectural profession by its past acts and proved and tested by long years, is a precious asset that must not be lightly ignored. In anything that is done by the profession in the future to further adjust itself to world changes and conditions, its integrity as a just arbiter between interested parties, its honor built upon disregard for selfish profit from the operations which it supervises, must be maintained.

It is the bed-rock upon which the foundations of the whole architectural professional structure rests. No profession or business, no group of men, no organization, can desire a finer basis upon which to establish itself. And such a basis cannot be acquired overnight. Taints cannot be eradicated in one generation. Reputations for character such as are enjoyed by architects are the cumulative products of a succession of generations of honorable acts on the part of the architects themselves.

* * * *

All honor to those of the past who helped sustain this high integrity! The profession today, in the swirl of world changes, is beset on every side by temptations to do as others seem to be doing. Its traditional slowness, its traditional unwillingness to depart from custom, mayhap, is the reason for the profession's proceeding so cautiously along the road today, to find its way out under the new set of world conditions which it is facing.

The unique glory of the architect rests not alone in his practical work for humanity, the betterment of living conditions and surroundings, in the creation of objects of beauty which further lead to the higher inspiration of the rest of his fellow-men, and which leads, too, to an encouragement of men to continue their efforts toward higher things. The architect's glory is due in part to these things, but, after all, his highest honor is that which is awarded him universally—in America at least—of that of being an honest man, incorruptible.—Building Review, New Orleans.

Building Forecast for 1920

SAN FRANCISCO will lead all Pacific Coast cities in new building construction next year, according to advance figures gathered from state, county and municipal channels, architects, construction engineers and others in touch with building operations. One hundred and fifty million dollars is a conservative estimate of the cost of new construction work in the Coast cities in 1920, with very nearly one-half this sum to be spent in San Francisco and the Bay region. A greater sum will be expended in 1920 for new school houses than for several years past, due to the steady increase in population and the almost complete cessation of this class of building operations in 1918-19 on account of the war. Among the California cities that have voted bond money for new school buildings and which money will become available next year, are the following:

San Francisco	$3,500,000
Oakland	4,750,000
Sacramento	3,000,000
Berkeley	1,250,000
Fresno	1,250,000
Cupertino School District	100,000

Other public work, exclusive af the twenty or more millions, that will be spent for state and county highways, includes the Capitol Extension buildings in Sacramento, to cost $3,500,000, and the State building now under construction in the San Francisco Civic Center at an outlay of $1,250,000, together with various smaller projects, such as additions and betterments to state institutions, the work to be carried on by the State Department of Architecture at Sacramento, from funds appropriated by the last legislature.

There will be more office buildings erected in San Francisco in 1920 than for several years as a result of an urgent demand for modern offices in the business section. All of the better class of office structures are filled and owners are demanding increased rentals in consequence. At least two fifteen-story structures are assured, one—the Balfour-Guthrie building—will occupy the southeast corner of California and Sansome streets and the second will rise on the site of the old Nevada block at Montgomery and Pine streets. Both of these structures are being designed by Mr. George W. Kelham, the architect, and will be built by the P. J. Walker Company. Mr. Kenneth MacDonald will be associated with Mr. Kelham in planning the latter building. Preliminary work is likely to be started next year on the new Crocker estate building, from plans by Willis Polk & Company. This structure will be either twenty-five or thirty-five stories high and will replace the present Crocker bank and office building. The estimated cost of tearing down the old twelve-story building and erecting the new one is $6,500,000. A fourth large office building will be designed by Architect J. R. Miller, who estimates the cost at $700,000. At Powell and Post streets a twelve-story store and office building will be erected for Mr. Wm. Fitzhugh, from plans by Messrs. Reid Bros. and Bakewell & Brown, associated. Reid Bros. also expect to design a 15-story office building having 250 offices and costing at least $500,000. The Standard Oil Company has outgrown its quarters on the southwest corner of Bush and Sansome streets, and Architect George W. Kelham has been commissioned to prepare plans for a twelve-story addition to cost $2,000,000.

Besides the Crocker Bank, other financial institutions are planning to expand, among them the First National and First Federal Trust Banks. A $300,000 granite addition to the First National Bank at Montgomery and Post streets will provide banking and office space for both of these institutions. The

Bank of Italy already has started construction of a $500,000 five-story office building at Powell and Market streets, while the Union Trust Company at Grant avenue and Market street will spend at least $250,000 in adding two or three stories to its home. Officials of the Federal Bank have announced that construction will be started early in the new year on the bank's new home at Sansome and Sacramento streets. Five of the twelve stories will be built now at a cost of $1,500,000. The building will be of steel and granite. The Anglo-London Paris National Bank has purchased property to the north on Sansome street to provide for a substantial addition, the architecture to be in harmony with the present granite bank. Definite announcement regarding the size of the building and probable cost will probably be made early in the new year.

San Francisco bids fair to retain her world-wide reputation as an amusement-loving city, for no less than four new theatres are promised, none of which will seat under 2000 persons, and will involve an outlay of at least $4,000,000. They are: New home for the Orpheum to cost $1,000,000; seven-story office building and theatre, Market and Taylor streets, for the Ackerman-Harris-Loew Interests; class A theatre to occupy part of the Prager Department store site at Market and Jones streets; alterations to the Verdi Theatre on Broadway, and a large moving picture house at 3350 Mission street for the Lyceum Theatre. In Oakland, a new Orpheum will be constructed at an outlay of $800,000.

Apartment houses will be built in good numbers and in matters of design and cost will rank among the best in the country. Owners who have hesitated to build the past year or two because of the high cost of materials and labor, are convinced now that there is to be no appreciable fall in prices, and if the investment can be made to show a fair return there will be no hesitancy about building. Apartment house owners used to think that from $700 to $1000 a room was a good average when estimating the cost of a building, and it has taken some argument to persuade them to pay as high as $1200 to $1600 a room, which is the prevailing average. No material drop in rents is anticipated for another year at least, for the number of habitable apartment houses at present is nowhere near equal to the demand.

Two large "community" apartment houses are promised next year. One is being designed by Architect G. A. Applegarth for I. M. Green. It will be fifteen stories high and will occupy a marine-view site at Larkin and Francisco streets. The other is being planned by Architect T. Paterson Ross and will be built at Hyde and Filbert streets for W. B. Gray and others at an estimated cost of $350,000. The community plan is comparatively new in San Francisco and it bids fair to become a considerable factor in future calculations for the city's housing. Each tenant owns his own apartment, paying his share or percentage of the total cost of the building, either in cash or installments, like rent.

The various clubs and lodges of the city are already pretty well taken care of with possibly one or two exceptions. The Woman's Athletic Club has outgrown its new building in Sutter street and will build an annex costing $250,000. Oakland expects to have a five-story building to house the Athens Athletic Club, a new organization being formed and which will start to build as soon as 2000 members are enrolled.

The automobile industry continues to contribute to the city's growth and the Van Ness avenue district will see some notable improvements in 1920. There will be more than a dozen new auto sales buildings erected on this thoroughfare next year, the cost of which will vary from $35,000 to $200,000 each.

In the wholesale and industrial districts, expansion is the rule. The Walton N. Moore Dry Goods Company has announced its intention to erect an eight-story reinforced concrete loft building at Fremont and Mission streets for $250,000. At Spear and Folsom streets, a six-story warehouse and factory will

Present Cost of Building Materials

With Labor Wage Scale, Bonds, Etc.

THESE quotations are based on reliable information furnished by San Francisco material houses. Date of quotations, December 20, 1919. All prices f. o. b. San Francisco.

Note.—For country work add freight and cartage to prices given.

Bond—1½% amount of contract.

Brickwork—
Common, $34.00 per 1000 laid.
Face, $80.00 per 1000 laid.
Common, f. o. b. cars, $15.00.
Face, f. o. b. cars, $47.50.
Terra Cotta Tile Partitions—
12x12x2 in., 18c. per square foot
12x12x3 in., 21c. per square foot.
12x12x4 in., 25c. per square foot.
12x12x6 in., 30c. per square foot.
Hod carriers, $7.00 per day.
Bricklayers, $9.00 per day.

Composition Floors—30c. per sq. ft.

Concrete Work (material at bunkers)—

No. 3 rock	$2.00 per yd.
No. 4 rock	2.10 per yd.
Niles pea gravel	2.10 per yd.
Niles gravel	2.10 per yd.
Niles top gravel	2.00 per yd.
City gravel	1.75 per yd.
River sand	1.25 per yd.
Bank sand	.75 per yd.
Monterey sand	60c. per sack
Cement (F. O. B. cars)	$3.03 per bbl.

Rebate for sacks, 15c. each.

Atlas "White"	$9.50 per bbl.
Medusa cement	9.50 per bbl.
Forms	$60.00 per M

Wage—

Laborers	$6.00 per day
Concrete workers	7.00 per day
Cement finishers	8.00 per day

Dampproofing—
Two-coat work, 30c. per yard.
Membrane waterproofing—4 layers of P. B. saturated felt, $6.00 per square.
Hot coating work, $2.00 per square.
WAGE—Roofers, $9.00 per day.

Electric Wiring—$8.00 to $15.00 per outlet.
WAGE—Electricians, $8.50 per day.

Elevators—
Prices vary according to capacity, speed and type. Consult elevator companies.

Excavation—
$2.00 per yard.
Teams, $12.00 per day.
Trucks, $30.00 to $40.00 per day.
Above figures are an average without water. Steam shovel work in large quantities, less; hard material, such as rock, will run considerably more.

Fire Escapes—
Ten-foot balcony, with stairs, $100.00 per balcony.
Cost of ornamental iron, cast iron, etc., depends on design.

Glass—
21 ounce, 25c. per square foot.
Plate, 80c. to $1.25 per square foot.
Art, $1.00 up per square foot.
Wire (for skylights), 40c. per square foot.
WAGE—Glaziers, $8.00 per day.

Lumber—
Common (at building), $51.00 per 1000.
Flooring—

1x3 No. 1	$95.00 per 1000
1x3 No. 2	87.00 per 1000
1x4 No. 1	88.00 per 1000
1x4 No. 2	85.00 per 1000
1x4 No. 3	78.00 per 1000
1x6 No. 1	93.00 per 1000
1x6 No. 2	90.00 per 1000
1¼x4 and 6 No. 1	93.00 per 1000
1¼x4 and 6 No. 2	88.00 per 1000
Slash grain, 1x4 No. 1	72.00 per 1000

Shingles—

Redwood, No. 1	$1.60 per bdle.
No. 2	1.50 per bdle.
Red cedar	1.85 per bdle.

(Add cartage to above)

Hardwood Lumber—	Per ft.
1" FAS Ash	23c.
1" FAS Birch	22½c.
1" FAS Southern Red Gum	19½c.
1" FAS Jenisero (Genezero)	18½c.
1" FAS Hawaiian Koa	29c.
1" FAS Mahogany	40c.
1" FAS Maple	20c.
1" FAS Plain Oak	25c.
1" FAS Quartered Oak	40c.
1" FAS Walnut	40c.

(Above quotations at yard.)

Hardwood Floors—
Maple floor (laid and finished), 28c. per foot.
Factory grade floors (laid and finished), 24c. per foot.
Oak (quartered, finished), 35c. per foot.
Oak (clear), 30c. per foot.
Oak (select), 28c. per foot.
WAGE—Floor layers, $9.00 per day.

Hardwood Floors (Laid)—

Clear plain oak, per sq. ft.	33⅓c.
Select plain oak, per sq. ft.	30c.
13/16" x 2¼" T. & G. flooring, clear plain oak, per sq. ft.	44c.
Clear, quarter sawed	52c.

Hardwood Floors (not laid)—

		Per M ft.
13/16x2¼" face	Clear quartered oak	$300.00
	Select quartered oak	230.00
	Clear plain oak	230.00
	Select plain oak	205.00
	Clear maple	175.00
	Clear maple—white	195.00
13/16x3¼" face	Clear maple	150.00
1⅛x2¼" face	Clear maple	155.00
⅜x2" face	Clear quartered oak	230.00
	Select quartered oak	195.00
	Clear plain oak	175.00
	Select plain oak	155.00
	Clear maple	115.00
	Clear beech	105.00
	Clear red beech	112.50

Veneered Panels—

24x60 in., ¼ in., 3-ply, 1 side:	Per ft.
Ash	33½c.
Hungarian Ash	35¼c.
Birch	23½c.
Curly Birch	34¼c.
Elm	21c.
Jenisero (Genezero)	33½c.
Southern Red Gum	27c.
Qtd. Southern Red Gum	34½c.
Hawaiian Koa	34c.
Maple	22c.
Birdseye Maple	41½c.
Mahogany	34½c.
Oregon Pine	15c.
Plain Oak	27c.
Quartered Oak	34¼c.
Walnut	33½c.

Millwork—

O. P., $120 per 1000. R. W., $120 per 1000.

Labor—

Rough carpentry, warehouse heavy framing, $15.00 per 1000.
For smaller work, average, $23.00, $30.00 per 1000.
Double hung box frame windows (average) with trim.....$9.50 each
Doors, includ. trim (single panel) 9.00 each
Doors, including trim (five panel) 7.50 each
Screen doors ..... 4.50 each
Window screens ..... 3.50 each
Medicine cases ..... 5.00 each
Cases for kitchen pantries, seven feet high, per lineal foot..... 8.00
Dining room cases same price, if not too elaborate.
Flag poles, per foot..... 1.50
Base, picture mould, moulding, etc. .....$120.00 per M
WAGE—Laborers, $6.00 per day.
Carpenters, $8.00 per day.

Marble—

Columbia	$1.50 sq. ft.
Alaska	1.50 sq. ft.
Tennessee	1.75 sq. ft.
Verde Antique	3.00 sq. ft.

Painting—

Two-coat work, 35c. per yard.
Three-coat work, 45c. per yard.
Whitewashing, 5c. per yard.
Cold water paint, 10c. per yard.
WAGE—Painters, $8.00 per day.

Patent Chimneys—

6-inch	$1.50 lineal foot
8-inch	1.75 lineal foot
10-inch	2.25 lineal foot
12-inch	3.00 lineal foot

Pipe Casings—$10.00 each.

Plastering—

Interior, on wood lath, 60c to 65c per yard.
Interior, on metal lath, $1.10 per yard.
Exterior, on brick or concrete, $1.00 per yard.
Interior on brick or terra cotta, 50c. per yard.
Exterior, on metal lath, $1.80 per yard.
Wood lath, $8.25 at yard per 1000.
Metal studding, 80c. per yard.
Metal studding, with lath and plaster, $1.90 per yard.
Galv. (metal lath), 38c. and up per yard, according to gauge.
Lime, f. o. b. warehouse, $2.40 per bbl.
Hardwall plaster, $17.50 per ton, f. o. b. warehouse.
WAGE—Hod carriers, $7.50 per day.
Plasterers, $9.00 per day.

Plumbing—

From $70.00 per fixture up, according to grade, quantity and runs.
WAGE—Plumbers, $9.00 per day.

Reinforcing Steel—

Base price for less than car load lots, $4.35 per 100 lbs.
Car load lots, $3.60 per 100 lbs., f. o. b. San Francisco. (Mill delivery.)

Roofing—

Five-ply tar and gravel, $7.00 per square.
Tile, $35.00 per square.
Redwood shingle, $10.00 per square.
Cedar shingle, $11.00 per square.
Reinforced Pabco roofing, $8.25 per square.
WAGE—Roofers, $8.00 to $9.00 per day.

Rough Hardware—

Nails, per keg, $6.50 base and very scarce.
Deafening felt, $100.00 per ton.
Building paper, P. & B.,
1 ply, $3.85 per 1000 ft. roll.
2 ply., $5.75 per 1000 ft. roll.
3 ply, $8.00 per 1000 ft. roll.
Sash cord,
(Sampson spot), $2.50 per hank 100 feet.
Common, $1.75 per hank 100 feet.
Sash weights, cast iron, $80.00 per ton.

Skylights—

Copper, $1.25 a square foot (not glazed).
Galvanized iron, 50c. a square foot (not glazed).
WAGE—Sheet metal workers, $9.00 per day.

Store Fronts—

Kawneer copper bars for store fronts. Corner, center and around sides, will average $1.35 per lin. foot.

Structural Steel—$150.00 per ton.

This quotation is an average for comparatively small quantities.
Light truss work higher; plain beam and column work in large quantities, less.

Tile—

White glazed, 80c. per foot.
White floor, 80c. per foot.
Colored floor tile, $1.00 per foot.
Promenade tile, $2.00 per sq. foot, laid.

Windows—

Metal, $2.00 a square foot.

be erected for Haas Bros. Schwabacher-Frey Company have let a contract to Lange & Bergstrom to build them a $250,000 building at Third and Bryant streets. The Schmidt Lithograph Company will spend $200,000, adding to their already large plant at Second and Bryant streets. There is an exceptional demand for spur track property, which is a splendid barometer that San Francisco's manufacturing industries are on the increase.

According to the records at the City Hall, building permits issued the past year up to December 1st totalled $13,724,415 for 4,891 buildings, both public and private, as compared with 3,688 buildings totalling $8,924,319 in 1918. Chief Inspector Horgan says he believes this year's record will be eclipsed by an increase of from twenty-five to fifty per cent.

San Francisco Municipal Work

City Architect John Reid, Jr., states that his department will handle something like $3,500,000 worth of new construction work during the coming year, provided there is a ready market for school bonds already voted.

Many of the city school buildings are badly crowded and will require additions. The planning of these has been assigned to a number of different architects, as follows:

Morris M. Bruce—additions to the Adams school on the north side of Eddy street, between Van Ness avenue and Polk Street.

Chas. Sumner—addition to the McKinley school on the southwest corner of Castro and 14th streets.

August G. Headman—addition to the Spring Valley School, Jackson street, between Hyde and Larkin streets.

Martin A. Sheldon—addition to the Bernal Heights school at Courtland avenue, between Andover and Moultrie streets.

Ward & Blohme—addition to the Hancock school on Filbert street, between Jones and Taylor.

Herman Barth—addition to the Columbus school on 12th avenue, between Kirkham and Lawton streets.

Walter O'Brien—addition to the Edison school at Church and 22d streets.

The new Mission High school on 18th street, between Dolores and Church streets, and the Grant and Harrison schools, will be designed in Mr. Reid's office.

Plans have been completed by the city architect for Fire Chief Murphy's residence and construction is expected to start early in the new year.

Los Angeles Building Prospects for 1920 Better Than 1919

(Special Correspondence)

Los Angeles. — Prospects are that building operations in Los Angeles will climb well over the thirty million mark during 1920. Los Angeles got a flying start in building early in 1919, with the result that building operations for the year ran close to $30,000,000. Growth and development of the city during 1919 are assurance that there will be no lessening of the demand for new buildings. At least six of the large building projects now in the hands of architects will be started early in 1920. These projects aggregate in value very nearly $6,000,000 and include office and mercantile buildings and theatres. Chief of these is the eleven-story class A office building for the Pacific Mutual Life Insurance Co., which is to cost $2,500,000. Plans for this structure are being completed in the office of Mr. W. J. Dodd, architect, and Mr. Wm. Richards, engineer. Excavation is now under way and a contract has been let for the structural steel for this building.

Grauman's new theatre will cost, according to the owners, $2,000,000. Charles Lamb of New York will be the architect. Adolph Ramish will probably spend more than $1,000,000 on a theatre and arcade in Mercantile place. The name of the architect has not yet been announced. A number of large building operations started during the latter part of 1919 will be carried over into the coming year.

Los Angeles board of education has mapped out a $7,000,000 building program for 1920 and a bond issue for that amount will be submitted to the voters early in the year. Should a bond issue not be authorized the board will have at least $1,000,000 available for construction from the sale of Mercantile place. The Civic Center agitation has gained new impetus and while plans for a new city hall have not reached any tangible stage there is hope that a definite move will be made during 1920. Immediate efforts are being directed toward a definite solution of the Civic Center problem with greater promise of success than at any time since the city acquired the Temple Block site for a city hall.

Portland's Building Record Next Year Will Exceed $15,000,000

(Special Correspondence)

Portland, Oregon.—Building in Portland, and throughout Oregon, during the coming year will total once and a half

(Concluded on page 121)

THE
Architect and Engineer
INCORPORATED

Founded 1905 by E. M. C. WHITNEY
A. I. WHITNEY - - - *Manager*
FREDERICK W. JONES - - *Editor*

Published Monthly in the Interest of the Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast by The Architect and Engineer Co.

BUSINESS OFFICE AND EDITORIAL ROOMS
627-629 Foxcroft Building, San Francisco
Telephone Douglas 1828

The publishers disclaim any responsibility for statements made in the advertisements of this magazine.

TERMS OF SUBSCRIPTION
(Including postage) to all parts of the United States $2.50 per annum; to Canada 75c additional; to all Foreign points $1 additional.

Vol. LIX. DECEMBER, 1919 No. 3

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Daniel H. Burnham said: "Make no little plans; they have no magic to stir men's blood and probably themselves will not be realized. Make big plans; aim high in hope and work, remembering that a noble, logical diagram once recorded will never die, but long after we are gone will be a living thing, asserting itself with ever-growing insistency. Remember that our sons and grandsons are going to do things that would stagger us. Let your watchword be order and your beacon beauty."

SELECTING SCHOOL ARCHITECTS

With many of the principal cities in California voting large sums of money for new school houses, the question of employment of architects has become an important one, not alone to the various Boards of Education but to the resident architects of each locality. In Fresno, where several hundred thousand dollars will be expended on new buildings and additions, the school board has apportioned the work to the local architects. This in spite of the fact that strenuous efforts were made by outsiders to secure the commissions.

In Berkeley the Board of Education appointed an architectural advisor who will oversee all new construction, design some of the buildings himself and invite other architects to assist him. In instances where an architect is named to design a building complete he is to be paid the regulation fee of six per cent.

This plan is much more satisfactory than the one followed in Oakland several years ago, when the commission was divided between the architect and the supervising architect. In fact, the Berkeley plan seems to be the most satisfactory yet developed.

Oakland has voted another bond issue and the selection of architects is in the hands of the School Board and a special committee of citizens and taxpayers. A number of San Francisco architects who reside in Oakland and pay taxes there feel they are entitled to some consideration, but members of the city government have intimated that there will be no commissions assigned to outsiders. In other words, the appointees will be confined strictly to practicing members of the profession maintaining bona fide offices in the city of Oakland.

In Sacramento there is some $2,034,000 to spend. Mr. Francis J. Reid, a local architect, has offered to design the fourteen new school buildings there for a commission of $1,000 for each school. The Board of Education has figured this out as a saving of $100,000 over the blanket

offer of the other architects of the city to take the work on a six per cent basis.

San Francisco has a city architect who will design a number of the new buildings under that city's bond issue. The balance will be planned by individual architects named by the city architect and approved by the Board of Supervisors. This plan, while savoring somewhat of politics, has its good qualities, nevertheless, since it stimulates competition among the appointees and insures perforce some exceptional designs.

HOW SEATTLE WON THE "OPEN SHOP"

In Seattle, Washington, the open shop is being established by the force of public opinion as the result of an intensive publicity campaign in the Seattle dailies, conducted by the Associated Industries. Pages on pages of advertising informed the Seattle public that the industries and commerce of Seattle were being attacked by the radicals of organized labor and that, if their domination over organized labor and the industries and commerce of Seattle were not broken, the population, industry, commerce and prosperity of the city would decline.

The movement in Seattle is not against unionism, but against the domination of unionism and industry by un-American radicals. The Associated Industries, in its publicity, has repeatedly recognized the right of workers, as well as employers, to organize; has endorsed the principle of collective bargaining; has declared that there shall be no discrimination against union men under the American Plan, and has urged employers not to take advantage of unemployment to cut wages. The Associated Industries has been consistently American and so has won the confidence of the public and of the conservatives of union labor.

Seattle is winning industrial independence by the power of organization.

Final declaration for the open shop in Seattle came when Mr. Waterhouse became convinced that the radicals, still in complete domination of the unions, were attempting, by a series of strikes, to paralyze the industries of Seattle and take them over. Advance information of this plan was verified by events. On September 2, the carpenters and some of the other unions in the building trades struck to enforce impossible wage demands, in spite of the vital public need of more homes and other buildings and the willingness of the employers to arbitrate. They arrogantly stated that their demands, involving $10 a day wage for carpenters and other exorbitant increases, must be granted first, and then they would talk arbitration.

On October 14, Seattle contractors, backed by the Associated Industries of Seattle, declared open shop in the building industry, after six weeks of fruitless negotiations with the unions to bring the strike to a settlement on terms which would not make it impossible for new buildings to be undertaken. Their action, announced in page advertisements in the daily newspapers, was applauded by the public. On October 31, the Building Trades Council voted to call the strike off. The strikers returned at their old wages and under open shop conditions.

The declaration of open shop by the building contractors was a body blow to union labor radicals and disarranged their plans to bring about industrial paralysis by involving one industry after another in strikes. A sentiment against strikes developed in the unions, and no more strikes were called.

Thinks 6 per cent Too Much for School Work

The newspapers have been printing some interesting communications from the profession bearing on the employment of architects to design new school buildings, under recently authorized California bond issues. One communication in particular—in a Sacramento paper—has provoked not a little unfavorable comment and should be answered by some reputable archi-

tect capable of taking issue with the author for some of his statements or rather misstatements. The communication was written by Mr. Francis Reid, a Sacramento architect who, it would appear, has not designed so many schools that he should consider himself entirely competent to criticize his fellow practicioners. Mr. Reid's belittlement of the architects' standard fee of six per cent, which is small enough compensation, should appeal to the public as acclaiming his lack of sympathy for the American Institute of Architects and its high ideals. It is just such "shoddy" architecture referred to by Mr. Reid in his letter, that the Institute is trying to discourage by fixing a fee sufficiently large to yield the architect a fair return for services rendered. Mr. Reid's letter, in part, follows:

Sacramento, November 13, 1919.

To the Editor of The Sacramento Bee —Sir: Regarding the vexed question who shall design and build the new schools, it is desirable that more artistic, practical, substantial and economical buildings be secured than is usually the case in our cities under the bonding system.

One-half the amount usually voted would suffice, if it were not for providing plenty for "experting the bonds," fat fees for architects, big profits for builders, and all kinds of rakeoffs along down the line.

Unfortunately also, there are a number of "school architects" chasing up and down the state following up school bond elections, putting it over on school boards, and filling our communities with pretentious, shoddy structures, unsuited in many ways for school purposes, needing constant and expensive repairs, and sure to become wrecks in need of replacement long before the bonds voted for their erection are paid.

It may be very fine to consider the architects, builders and everybody else in our towns and cities who want to be a Little Jack Horner, sitting in a corner

Eating school-bond pie;
Putting in a thumb, pulling out a plum,
And saying, see what a good boy am I,

but the ones who ought to be considered first, last and most of the time are the children, teachers and taxpayers who will have to use and pay for these buildings and their upkeep.

"You vote for them, we pay for them" is a good slogan for the banners in a parade of school children, but the vital question is whether the buildings will be worth paying for and whether they will last until they are paid for.

To the average father and mother toiling in the shop or store, or slaving in the kitchen or over the sewing machine or washtub, bucking the H. C. L. for a long period of years to feed, clothe and educate children and pay taxes upon school bonds, it means only added sacrifice and hardship when large fees and profits are paid for costly and flimsy school buildings.

There is a great deal of "bunk" about the labor and difficulty of designing school buildings. They are all composed of similar, simple units, which have been standardized and only need to be joined with halls and stairways. Six per cent is entirely too much to pay any architect for the time and skill required. If taxpayers sacrifice to provide money, local architects ought to be equally self-sacrificing and public-spirited enough to do the work at a small margin of profit. The $150,000 suggested as the sum to go into the pockets of ten architects of Sacramento is enough to pay well for their services, erect another building to cost $100,000 and then some.

The taxpayers of Sacramento will put up enough money and ought to get the best schools in the country. Citizens should oppose any proposition of local architects to assess themselves $6,000 to pay for incomplete and no doubt obsolete sketches of a high school, in order that all work should be handled by them. Such a proposition is only camouflaged bribery. Citizens also should veto the architects' suggestion that their fees be provided for by skinning $12,000 out of the size and construction of each building.

* * *

Taxpayers should see that their city commissioners are supported in every way in having the bond money expended upon actual construction and equipment, and that as little as possible be spent for anything else. Buildings should be made so substantial that their roofs will not leak or the plaster crumble off. Their construction should be as nearly as possible fire-proof, and everything arranged so that the expense for care and upkeep will be reduced to the minimum.

FRANCIS W. REID,
Certified Architect.
424-426 Ochsner Building.

Great Help to Technical Men

Editor The Architect and Engineer:—Enclosed is my check for $1.50, account of subscription for the year 1919.

I enjoy your magazine very much and think you have an excellent publication. Your pages with present cost of building materials are a feature that will be appreciated by many technical men.

Wishing you all success,

Yours truly,

San Diego, California. W. L. MENZIES.

Communications

The Architects and Architecture of Stanford University

Kings College Apartments
501 W. 121st St., New York City.
November 1st, 1919.

Editor The Architect and Engineer:

Your recent October number has reached me in New York, and I was particularly interested in the article on the Leland Stanford Jr. University by Mr. Irving F. Morrow, architect.

It is my loss, I presume, that I have not the pleasure of an acquaintance with Mr. Morrow, but I would like to correct his statement, that the inception of the University was entrusted to Mr. H. H. Richardson, whose death occurred several years before the University originated. Messrs. Shepley, Rutan & Coolidge (all head men in Mr. Richardson's office), were the original architects for the University, Mr. Coolidge visiting California at Senator Stanford's request, and taking the motif of the University from the Santa Barbara Mission. It was my privilege to enter Messrs. Shepley, Rutan & Coolidge's employ, as draughtsman at the University, when the first building of the Inner Quadrangle was being erected, and I remained in that capacity until the Inner Quadrangle was completed. Senator Stanford then appointed me Resident Architect. The ¼-inch scale sketch design for the entire facade was worked out by me in which I made the change, with the sanction of Shepley, Rutan & Coolidge, of running the second floor over the arcade, instead of roofing same, which you will observe is on the original "bird's-eye" view. The Outer Quadrangle was commenced with the erection of the Library and Assembly Hall, and Messrs. Percy and Hamilton were the architects for same, my elevation being used for the exterior. These buildings were followed by the Zoology and Botany Departments, by Mr. Henry Schultze, architect. The Memorial Arch was the next feature, designed by Messrs. Shepley, Rutan & Coolidge, 75 feet high, and was re-designed by me, to a height of 100 feet, the drawings being submitted to and approved by the original architects.

The Memorial Church, with the History and Physics Buildings, were carried out by Mr. Clinton Day, the motif being Trinity church, Boston, by Mr. H. H. Richardson, and on all this work I was called in as associate architect.

I designed the balance of the Outer Quadrangle and was associated with the University for seventeen years. The present quadrangle in the original design, was intended to have been the central feature, but is now overshadowed by the new Library building, the conjunction of which, with the one-story building on the corner, strikes the casual observer as being in too close proximity with the old buildings.

I think that this information should be generally known, in fairness to the prominent members of the architectural profession who took part in the original planning of Stanford University.

Charles Ed. Hodges,
Architect.

Land Settlement Board's New Work

Editor The Architect and Engineer:

Please have my address changed on your subscription list, from Durham, Butte county, to Turlock, Stanislaus county, California.

The Land Settlement Board has purchased 8000 acres at Delhi, which will be divided and opened, in the same way that Durham was handled.

To handle the building work, I have with me Mr. B. L. Ryan, landscape designer of San Diego, California, and together we hope to have, by spring 50 houses built in addition to the administration buildings, working drawings of which we are now preparing.

We will be glad to receive trade literature from all sources.

Sincerely yours,
Max E. Cook.
Turlock, Dec. 1, 1919. Farmstead Engineer.

Landscape Architect Home From War Duty

Editor The Architect and Engineer:

Home again after an absence of nearly two years doing my bit for Uncle Sam in the Construction Division of the Army. A most interesting experience it has been, too. Briefly, when the late unpleasantness started, I volunteered to serve and was called to Washington and given instructions for a visit of supervision and inspection of our Western Camps.

Upon completion of this task I was sent to Charleston, S. C., on a warehouse and embarkation depot project. Thence on a T. B. hospital project at Markleton, Pa. Thence to Cape May on another hospital project.

Upon my return to Washington I was sent to Columbia, S. C., from there to Camp Gordon, near Atlanta, from there to Camp McClellan, Anniston, Ala., on an artillery layout; from there to Columbus, Ga., to prepare plans for a new small arms camp with an area of some 215,000 acres. This camp being intended to serve as a Post Graduate School for the West Point boys.

This was by far the most interesting project I had anything to do with and we had it pretty well along when the armistice put a crimp in further progress. My headquarters were in Washington, D. C., and from there I made monthly visits of inspection and supervision to the various projects.

Our division fully expected and would have gladly gone to France or anywhere else for that matter, and were greatly disappointed when the engineers were sent instead.

We are all very proud of the showing made by the Landscape Architects, especially of the members of the Am. Soc. of L. A.

To a man they volunteered to serve and were called to the colors—some at the front, some with the Housing Corporation and the balance with the Construction Division.

We had one of the most successful meetings in the history of the Society and Mr. F. L. Olmsted, President of the Chapter, was presented with a gold medal for his services on the National Council of Defense.

We also organized a Pacific Coast Chapter (so that our Society now reaches from Coast to Coast) and the honor of the presidency was thrust upon your humble servant.

We sincerely hope to be of use to the architectural profession and to secure a closer co-operation between the two allied professions than has ever been the case in the past. Every member of the Society is a trained man, either learning the business in the offices of the leading landscape men in this country, or are graduates of some recognized college of landscape architecture.

A high code of ethics is maintained and no member has any affiliation with nurserymen or contractors and this should mean a lot to prospective clients.

The name Landscape Architect, I am sorry to say, has been much abused in California by Japanese gardeners and others, and I personally propose to use the term Member of the Am. Soc. of Landscape Architects. No one can use this without having passed a most rigid examination by the parent Chapter, and Fellowships are only given after long practice and the execution of work of sufficient importance to win such a fellowship.

We would certainly appreciate it if you can find space in your valuable publication to place us on record with the A. I. A. and the Am. Soc. of Civil Engineers. I believe I am safe in saying that I can promise you some interesting material from other chapter members and possibly myself in the coming year, if you care for it.

I felt with the stress of war work over that in justice to myself it was best for me to get back into the game before every one forgot me.

The last piece of work I was engaged upon for the Division was the preparation of plans for an aviation field at the Presidio.

Sincerely yours,
W. D. Cook, Jr.,
738 H. W. Hellman Bldg., Los Angeles.

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With the Architects

Building Reports and Personal Mention of Interest to the Profession

Standing Committees, San Francisco Chapter, A. I. A., for 1920

The regular monthly meeting of the San Francisco Chapter of the American Institute of Architects was held on Thursday evening, November 20, 1919, at the Architectural Club rooms, 77 O'Farrell street.

The President announced the appointment of the following standing committees for the ensuing year:

S. F. Sub-Committee on Competitions of the American Institute of Architects: Sylvain Schnaittacher, Chairman; Morris M. Bruce, Arthur Brown, Jr., George W. Kelham, William Mooser.

Practice: Charles Peter Weeks, Chairman; George W. Kelham, Smith O'Brien.

Relations with Coast Chapters: W. B. Faville, Chairman; Wm. Otis Raiguel, Augnst G. Headman.

Building Laws: G. A. Applegarth, Chairman; G. A. Lansburgh, J. W. Dolliver, Arthur G. Scholz.

Legislation: John J. Donovan, Chairman; John Reid, Jr., William Mooser.

Public Information: Smith O'Brien, Chairman; William Mooser, Leo J. Devlin.

Education: John Bakewell, Jr., Chairman; Ernest Coxhead, Wm. C. Hays.

Entertainment: Fred H. Meyer, Chairman; E. G. Bolles.

Library of S. F. Architectural Club:

SPECIAL COMMITTEES

Committee on Relations to Building Contractors: William Mooser, Chairman; George W. Kelham, Smith O'Brien, Fred H. Meyer, Charles Peter Weeks.

Committee on Civil Service: Sylvain Schnaittacher, Chairman; Charles Peter Weeks, William Mooser, John Reid, Jr.

Building Material Exhibit: J. W. Dolliver, Chairman; Morris M. Bruce.

It was moved by Mr. Smith O'Brien and seconded that a campaign of advertising the profession in the weekly building sections of the daily press be inaugurated by the Chapter. The motion was carried.

There was a discussion of the code of rules proposed for the taking of bids from contractors, but no formal action was taken.

At a Board of Directors' meeting held on November 13, 1919, a motion was made and seconded that the resignation of Mr. Edgar A. Mathews be accepted. The motion was carried.

The completion of the club rooms of the San Francisco Architectural Club, at 87 O'Farrell street, was celebrated on the evening of November 8th by a smoker given in honor of the members of the San Francisco Chapter of the American Institute of Architects. As the club rooms are to be occupied jointly by the Club and the Chapter, the Chapter members present were very much pleased at the success of the younger members of the profession in the work of designing and building the joint quarters.

An address by Mr. Flanders, President of the Club, followed by remarks by Messrs. Bakewell, Coxhead, Brown, Howard, and President Schnaittacher of the Chapter, and Mr. Pflueger of the Club.

The promise of cooperation between the older and younger men, which was presaged in the various comments of the speakers, augurs well for the future educational work of the Club and it is in the educational work of the Club that its greatest and lasting value lies and which makes it worthy of the earnest support of all members of the profession.

State Board Grants Certificates

At the meeting of the California State Board of Architecture held on November 25th, the following were granted certificates to practice architecture in this State:

George T. de Colmesnil, 907 Rialto Bldg., San Francisco.

Frederick S. Harrison, 1116 Twenty-third street, Sacramento.

Aram Torossian, 403 Fresno avenue, Fresno.

The new members of the Northern District Board are as follows:

President, Clarence R. Ward.

Secretary, Sylvain Schnaittacher.

Members: James R. Miller, John J. Donovan, Edward Glass.

State Board of Architecture

Mr. John Parkinson of Los Angeles was elected president of the California State Board of Architecture at joint meeting of the newly-appointed members of the northern and southern districts, held in Santa Barbara. Mr. Clarence R. Ward of San Francisco was elected vice-president.

Both the northern and southern boards completed their organization, officers being chosen as follows:

Southern District—Mr. John Parkinson, president, and Mr. A. M. Edelman, secretary and treasurer.

Northern District—Mr. Clarence R. Ward, president, and Mr. S. Schnaittacher, secretary and treasurer.

Wins First Prize

Mr. Ernest Weihe, draftsman for Messrs. Bakewell & Browne, architects of San Francisco, has been awarded first prize in the annual competition of the Beaux Arts Society of New York, his competitors having included practically all of the architectural draftsmen of the United States. This is the first time the prize has been won by a Pacific Coast draftsman. Mr. Weihe, who is a native son, was born in Wizard, Yolo county. He entered upon his career a year after the fire and gained most of his technical training in San Francisco, in the atelier of Mr. Arthur Brown, Jr.

State Reports Scarcity of Draftsmen

Because of the difficulty experienced lately by the California State Highway Commission in its attempts to lure young draftsmen from the large cities to division office jobs in the back country, Mr. T. H. Bedford, engineer of division No. 3, with headquarters at Dunsmuir, has secured approval of a plan to establish a branch office at Berkeley for the purpose of securing the help of student draftsmen enrolled at the state university.

In other words, if engineers and draftsmen will not follow the work of the commission, the commission is making preparations to take the work to them.

Architect Was Underpaid

Mr. William Mooser, the San Francisco architect, who, the Grass Valley grand jury asserted, was overpaid by the county supervisors in connection with the building of a county hospital in the sum of $1365, has made a public statement denying such overpayment.

Mr. Mooser states that he was to receive 10 per cent of the construction cost for his services, $3000 to be paid at the time the plans were delivered and the balance as the work progressed. On this basis he claims he has been underpaid in the sum of $273, instead of overpaid.

Form Partnership

Mr. Fred L. Swartz, Rowell building, Fresno, and Mr. C. J. Ryland, architect and engineer, formerly of Stockton, have formed a partnership as Swartz & Ryland, architects and engineers, with offices in the Rowell building, Fresno. They have considerable work on hand including a large hotel, garages and a number of schools.

Stadium to Seat 75,000

Student body of the University of Washington, Seattle, will send representatives east to study stadiums with the view of securing data for their proposed $400,000 structure to seat 75,000 people. It will be built in units, the first to be under way as soon as an architect is commissioned to prepare the plans.

Personal

A new firm has been established in Portland, Oregon, in the combination of Mr. Jamieson Parker, formerly with Mr. A. E. Doyle, and Mr. Folger Johnson, who before its dissolution by his entering war service was a member of the firm of Johnson and Mayer. The offices of Johnson and Parker are in the United States Bank building, Portland.

Mr. Geo. W. Eldredge has reopened an office for the practice of architecture in suite 621-626 Exchange building, Third and Hill streets, Los Angeles. Mr. Eldredge desires samples and catalogs of building materials.

Mr. Louis Svarz, architect, who has been stationed at Camp Taylor, Kentucky, with the U. S. field artillery for the past year, has returned to Seattle and opened offices at 24 Seattle National Bank building.

Mr. George H. Keith, architect, announces his return from service in France. He has reopened his office at 612 Hutton building, Spokane, for the practice of architecture.

Mr. Louis Stone, formerly of Stone and Wright, Stockton, has opened an office in the Albany block, Oakland.

Messrs. John P. Krempel and Walter E. Erkes, architects and engineers, are now occupying their new offices in the Bradbury building, Los Angeles.

Mr. Earl Scott has opened an office in the Albany block, Oakland.

Mr. Alfred F. Priest has moved his offices to 618-619 Fay building, Los Angeles.

Junior Architects Organize

For the past few months the Washington State Chapter of the American Institute of Architects has given a considerable amount of thought to the younger members of the profession. It was felt that there was need for an organization that should embrace both the professional and social life. The result is that on October 15th the draftsmen held a meeting to form an organization of their own on the lines suggested by the Washington State Chapter. The meeting was well attended and was presided over by Mr. Arthur L. Loveless, who is a practicing architect in Seattle. The meeting was addressed by Messrs. D. R. Huntington and Louis Baeder, president and secretary, respectively, of the Washington State Chapter.

After listening to these gentlemen, the work of forming a temporary organization was taken up. The following temporary officers were elected: Mr. J. D. Johnson, chairman; Mr. F. Hanson, secretary; Mr. C. Grainger and Mr. B. Waite, members of the executive committee.

$100,000 Dormitory

Mr. T. F. Doane is preparing plans for a dormitory for the normal school at Bellingham, Wash., to cost $100,000.

Building Costs in 1916 and 1919

HERE are two items taken from a contractor's bid on the proposed completion of the brick hotel at Mason and Eddy streets, San Francisco, from plans by Mr. Earl B. Scott, architect, which go to show the increased cost of mill work and lumber in 1919 over 1916:

January, 1916		October, 1919
$5,306	Millwork	$15,150
$1,550	Lumber, 55M	$ 5,900

Another example of increased costs was a recent estimate given by a San Francisco contractor for a sixty-room addition to the Hotel Oakes, Chico. Two years ago the hotel was built at a total cost of $200,000. The proposed new wing which will be about half the size of the present building will cost $175,000.

Strikes and Boycotts Must Go

Mr. H. T. James, vice-president and manager of the Bass-Hueter Paint Company, San Francisco, was the principal speaker at a recent meeting of the Home Industry League. Mr. James said one of the greatest forces for production is the contentment of the employe.

"The rule that all men must be paid alike is wrong and always will be wrong," he said. "A man should be paid for what he is worth.

"The days of strikes and boycotts must be eliminated forever if home industry is to mean anything. But, whatever happens, let us keep hammering home industry until it becomes as familiar to us as the 'Star-Spangled Banner.'"

Removal Notice

The Smith-Booth-Usher Co., formerly located in the Rialto building, San Francisco, has removed to its new store and salesroom at 40-42 Fremont street, and announces that it will carry representative stocks of contractors' construction and road building equipment, mining and oil field equipment, machine tools, and gas and oil engines at the new location. The company's telephone is Sutter 135.

Atelier Resumes Work

The Los Angeles Architectural Club Atelier, Beaux Arts Institute of Design, has resumed its study of problems in design at its quarters, 423 Copp building. Regular meetings are held Tuesday and Thursday nights of each week. Mr. H. H. Hewitt is the representative of the institute; Mr. Leland F. Fuller, massier, and Mr. Leo Rombotis, sous massier.

Odd Fellows' Home

Following a meeting recently of the grand secretary and six trustees of the I. O. O. F. grand lodge of Idaho, Messrs. Tourtellotte & Hummel, Boise and Portland architects, were instructed to prepare working plans for a new state Odd Fellows' home to be erected on a 32-acre site at Caldwell, Idaho.

Eleven States Have Laws Licensing Engineers

Laws providing for the licensing of engineers are on the statute books of the following states, according to the best information obtainable by the License Committee of Engineering Council: Wyoming, 1907; Louisiana, 1908 (amended 1914); California, 1909; South Dakota, 1913; Illinois, 1915; Idaho, 1915; Florida, 1917; Oregon, 1919; Colorado, 1919; Michigan, 1919; Iowa, 1919. The License Committee is working on a draft of a typical bill which, it is intended, can be used if necessity should arise in states proposing new legislation on this object, or in those proposing revisions, so that laws enacted for licensing engineers may be uniform, or nearly so, throughout the country. Engineering council, however, has as yet taken no stand on the desirability of licensing or registering engineers. It desires to learn the opinions of engineers in various branches of the profession in all parts of the country and to secure as soon as possible all information that would be helpful to the committee.

Engineers Schedule of Salaries

The following schedule of salaries has been adopted by the American Association of Engineers:

City engineer, annual work, $5000 to $15,000; city engineer, annual work, $2500 to $10,000; city engineer, annual work, $1000 to $7500; city engineer, annual work, $500 to $5000; department engineer, $7500; division engineer, $7500; assistant engineer, $3600; instrument man (preferably technical graduate), $2400; rodman (high school, 2nd grade), $1500; inspector, $1800; architect, $5000; designing engineer (technical graduate, 10 years' experience), $6000; designer (technical graduate, 5 years' experience), $4400; detailer (technical graduate preferably), $3000; tracer (technical high school), $1800; draftsman, architectural, $3000; draftsman, map or topographic, $2400; draftsman, structural, $2400.

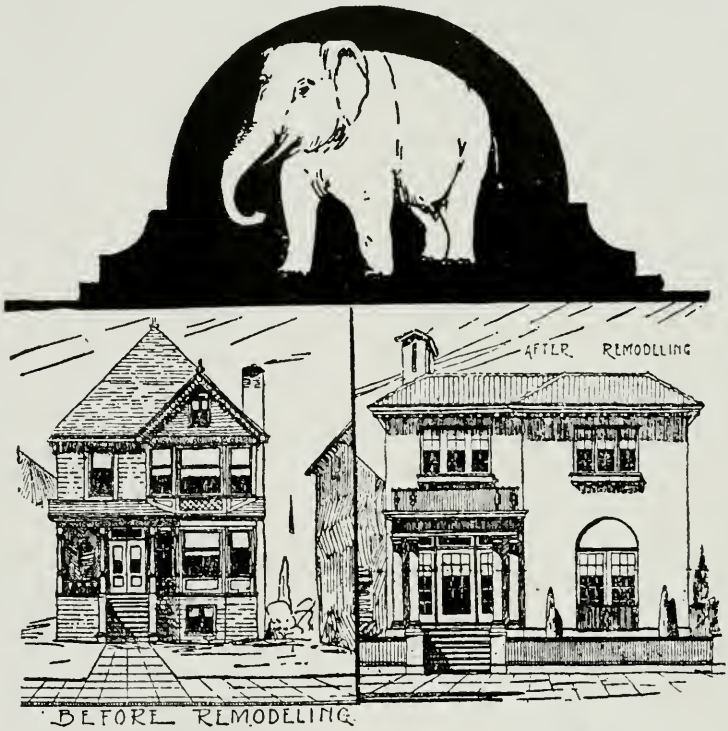
Four-Story Office Building

Mr. Fred R. Dorn, 1233 Marsh-Strong building, Los Angeles, has completed plans for a four-story and basement class "C" brick office and store building to be erected at Long Beach for Pickerell & Scott. The first story will contain store rooms and the upper stories will contain 75 offices.

K. of C. Building

Mr. Jos. Jacobberger, architect, Board of Trade building, Portland, has completed plans for the proposed $100,000 club building to be built for the Knights of Columbus on their property located at Park and Taylor streets, Portland, Ore.

DO YOU OWN A WHITE ELEPHANT?



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Should Architects Advertise?

THE above advertisement was published in the San Francisco and Oakland newspapers of recent date. The architects are both well known to the profession and their work in Oakland has been excellent. Whether such advertising is strictly ethical is a question of opinion. We would like to hear from members of the profession, some of whom have taken the position that professional cards only are acceptable and that display advertising like the above is all wrong and savors too much of the "quack doctor" methods. Messrs. Miller and Warnecke, however, maintain that the American Institute of Architects, at its last national convention, approved a plan of publicity on very liberal lines of which the above advertisement is an example, according to their interpretation. The architects declare the advertisement has brought many inquiries and some good prospects.

Building Forecast for 1920

(Concluded from page 111)

as much in cost as during 1919, according to present indications. In the city of Portland several hundred bungalows and residences of other types are already projected to care for the housing needs, while three hospitals are planned, including a new county hospital, the cost of all three of which will exceed a million dollars. The housing code has recently been changed to allow greater leniency in construction of apartment houses and a considerable number of new buildings of this nature are projected. Plans for a new $300,000 six-story apartment house have already been drawn. Total building costs of 1919 will run close to $10,000,000, according to figures of the city building inspectors, an increase of $3,000,000 over 1918. The coming year is expected to exceed $15,000,000. If the proposed new Montgomery-Ward plant comes to Portland that will mean an additional $1,500,000. Engineers of the company are here now and are investigating a site for the Pacific Coast headquarters of the company.

Outside of Portland in Oregon building is unusually heavy in proportion to population and the coming year promises to see a continuation. Pendleton reports half a million dollars worth of building in sight for early spring, while Eugene and Salem will both see the erection of new apartment houses and a considerable number of homes.

$2,000,000 for New Work in Modesto

(Special Correspondence)

Building activity in Modesto for the year 1920 will be well over the $2,000,000 mark, according to the present outlook. This will be almost twice the sum spent in building during the year just closing.

The biggest items for the coming year will be a $300,000 programme for new public schools already under way and $400,000 for civic improvements expected to start immediately after the first of the year. A new six-story $250,000 hotel building, a $125,000 theatre, a $100,000 department store, a $75,000 four-story office building, a $150,000 five-story office and lodge building for the Moose, a $200,000 home for the Elks lodge, several garages ranging from $25,000 to $50,000, a home building programme of several hundred thousand dollars, and numerous miscellaneous smaller buildings.

New Canneries for Oakland

The following concerns have purchased land and will build extensive plants on the Oakland Waterfront:

Libby, McNeill & Libby	$2,000,000
H. Jones & Company, Ltd.	260,000
Bisceglia Bros. Canning Company of San Jose	200,000
Great Western Milling Company	500,000

Work in Architects' Offices for 1920

San Francisco and Bay Cities

WEEKS & DAY, Phelan Bldg., San Francisco:

Two class A buildings for the State of California (Capitol extension project), Sacramento $3,500,000
Alterations to Yosemite Theatre, Stockton $130,000
Eighteen-story bank and office building, 7th and K streets, Sacramento, for Sacramento Fort Sutter bank $1,000,000
Moving picture theatre, Seattle, Washington $600,000
Moving picture theatre, Palo Alto, $75,000
Group of apartment houses and dwellings, Fresno, for J. A. Manning $200,000
Reinforced concrete bridges for Tehama county $100,000

WILLIS POLK & COMPANY, Hobart Bldg., San Francisco:

Twenty-five-story class A bank and office building, gore of Market, Post and Montgomery streets, San Francisco, for the Crocker Estate Company $5,600,000
Residence for Leo J. Clayburgh, Pacific avenue and Lyon street, San Francisco $40,000

BLISS & FAVILLE, Balboa Bldg., San Francisco:

Completion of State building, Civic Center, San Francisco $1,250,000
Group of buildings for Protestant Orphan Asylum, Haight and Buchanan streets, San Francisco $200,000
Six-story reinforced concrete department store building, Bakersfield, for E. W. Hopkins $100,000
Five-story class A bank and office building, Powell and Market streets, San Francisco, for Bank of Italy $500,000
Additions to Women's Athletic Club building, Sutter street, San Francisco $250,000

BENJAMIN G. McDOUGALL, Sheldon Bldg., San Francisco:

Seven-story reinforced concrete Colonial apartment house, Steiner street and Pacific avenue, San Francisco, for the Kittle Estate (Mrs. Hinckley Taylor) ..$200,000
Country residence for Mrs. John McNear, near Concord $25,000

MEL I. SCHWARTZ, Nevada Bank Bldg., San Francisco:

One-story planing mill, 126x110, for Klopstock Bros., 18th and Capp streets, San Francisco $25,000
Brick auto sales room and garage, Geary street, San Francisco $30,000
One-story brick machine shop and store building, Post and Leavenworth streets, San Francisco $18,000
Two-story and basement frame and stucco residence and garage for Walter B. Lomax, St. Francis Wood, San Francisco $12,000

GEORGE W. KELHAM, Sharon Bldg., San Francisco:

Five-story class A granite bank and office building, Sacramento and Sansome streets, San Francisco, for the Federal Reserve Bank of San Francisco. Building being designed for fifteen stories, but only five stories will be built the coming year..... .....$1,500,000

Fifteen-story class A office building, Montgomery and Pine streets, San Francisco, for the Commercial Union Assurance Company of London.....$1,250,000

Twelve-story class A office building, California and Sansome streets, San Francisco, for Balfour-Guthrie Co...$1,000,000

Twelve-story class A office building (addition) for Standard Oil Company, Bush and Sansome streets, San Francisco..... .....$2,000,000

Four-story office building, Richmond, for Standard Oil Co. $250,000

HENRY H. GUTTERSON, 278 Post street, San Francisco:

One-story frame school building (Le Conte School, Berkeley) $40,000

Two-story frame and plaster residence, Claremont, Berkeley, for William McDuffie $12,000

ALFRED HENRY JACOBS, 110 Sutter street, San Francisco:

Group of buildings, Ocean avenue, San Francisco, for Pacific Hebrew Orphans' Home $1,000,000

Class A moving picture theatre, Market and Jones streets, San Francisco, for Herman Wobber and Herbert L. Rothchild $600,000

WILLIAM WILDE, Nevada Bank Bldg., San Francisco:

Two-story and basement reinforced concrete addition to H. William & Company's building, 1108 Stockton street, San Francisco $25,000

GEORGE WAGNER, Construction Engineer, 251 Kearny street, San Francisco:

Group of reinforced concrete factory buildings, Melrose, Oakland, for Federal Wool Manufacturing Company, Edward P. Hulme, president.....$750,000

J. R. MILLER, Lick Bldg., San Francisco:

Two-story and basement class A office building, Pine street, between Front and Davis streets, San Francisco, for Ames Harris-Neville Company.....$100,000

Completion of new wing to Metropolitan Life Insurance building, Stockton street, between Pine and California streets, San Francisco $700,000

School building (Jefferson School), 18 class rooms, 19th Ave. and Judah street, San Francisco $160,000

Country house, San Mateo county, for J. J. Tynan $25,000

Country house, San Mateo county, for Mr. Talbott $25,000

Sketches for proposed class A office building, San Francisco $426,000

Cottage for the Portola Church, Portola, San Mateo county.....$10,000

WASHINGTON J. MILLER, Lachman Bldg., San Francisco:

Cannery, warehouse, power plant, etc., East 14th street and 55th avenue, Oakland, for Libby, McNeill & Libby..... .....$2,000,000

Two-story reinforced concrete factory and power house, Emeryville, for American Rubber Mfg. Company.....$100,000

Packing and preserving plant (contract let for five buildings), 29th avenue, East Oakland, for Jones Company, Ltd., A. W. Palfreyman manager $255,000

Pottery buildings, Oakland waterfront.. .....$150,000

MARTIN A. SHELDON, 110 Sutter street, San Francisco:

Bernal Heights School building, for City and County of San Francisco, Andover and Collingwood streets.....$30,000

Concrete municipal swimming pool, Colusa $40,000

Class C auto sales building and garage.. .....$50,000

GEORGE E. McCREA, Pacific Bldg., Oakland:

Hotel, apartment house and residence at Capitola for F. C. Rispin.....$200,000

Two-story brick convent, St. Agnes Parish, Stockton $25,000

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Completion of Sperry Flour plant, Ogden, Utah $225,000
Reinforced concrete grain elevator, for Sperry Flour Company, Stockton, $75,000

A. W. CORNELIUS, Merchants National Bank Bldg., San Francisco:
Three-story and basement brick or concrete store and hotel, Los Banos, for S. P. Galvin and associates.....$200,000
Two-story reinforced concrete store, office and theatre building for Brown Bros., Salinas (Turner & Dahnken, lessees).....$100,000
One-story and balcony class A store and theatre, Richmond, for Turner & Dahnken $125,000
Alterations and additions to the Verdi theatre, Broadway, San Francisco.....$100 000

WELSH & CAREY (JOHN W. CAREY), Merchants National Bank Bldg., San Francisco:
Six-story class C steel frame apartment house, near Civic Center, San Francisco.....$90,000
Five-story brick apartment house, Vallejo street between Laguna and Octavia streets, San Francisco $75,000
Completion of two-story bank building, Marysville, for Decker-Jewett Bank.....$25,000

JOHN GALEN HOWARD, First National Bank Bldg., San Francisco:
Stevens Memorial Hall for University of California, Berkeley $350,000

SHEA & MINTON, 244 Kearny street, San Francisco:
Reinforced concrete church and parochial school, Alameda, for St. Joseph's Parish $170,000

WM. C. HAYS, First National Bank Bldg., San Francisco:
Berkeley High School.....$1.250,000
Garfield School building, Berkeley.....$200,000
Hawthorne School building, Berkeley.....$150 000
Private hospital, Petaluma.....$60,000
Fraternity building, Berkeley, for Alpha Delta Phi $50,000

G. A. APPLEGARTH, Claus Spreckels Bldg., San Francisco:
Fifteen-story community apartment house, Larkin and Francisco streets, San Francisco, for I. M. Green.....$500 000

JAMES W. PLACHEK, 2014 Shattuck avenue, Berkeley:
Four-story reinforced concrete warehouse, Ward street and Shattuck avenue, Berkeley, for Students Express Company $75,000

ALFRED I. COFFEY, Humboldt Bank Bldg., San Francisco:
Two new wings to St. Francis Hospital, Bush and Hyde streets, San Francisco.....$500,000

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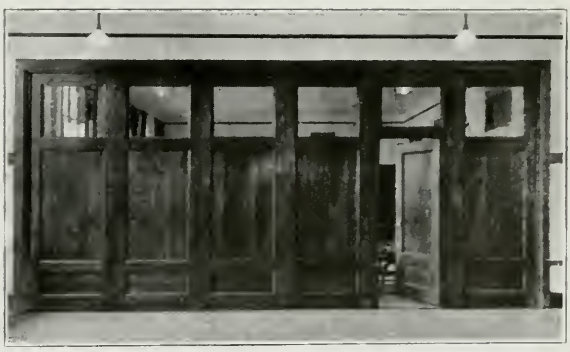

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AGENTS:

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Additions to Children's Hospital, California and Maple streets, San Francisco. $250,000
Ten-story class A store and office building, Post and Powell streets, San Francisco, for Wm. M. Fitzhugh (Reid Bros., associated) $400,000
Country residence for Col. D. C. Jackling, Burlingame $150,000
Residence for J. Henry Meyer, Palo Alto $50,000

A. W. SMITH, 1010 Broadway, Oakland:
One-story brick auto truck warehouse, Third, near Webster street, Oakland.... .....$25,000
One-story brick sales and storage building for steel firm, Webster near Third street, Oakland $20,000
One-story brick store building, Eighth and Clay streets, Oakland, for R. W. Kinney $15,000

SIDNEY B. NEWSOME, Nevada Bank Bldg., San Francisco:
Colonial residence, Crocker Highlands, for C. C. Clay $25,000
Two-story frame and brick veneer residence, Crocker Highlands, for H. W. Harrold $35,000

REED & CORLETT, Oakland Bank of Savings Bldg., Oakland:
Seven-story reinforced concrete and steel frame hospital, 31st street and Telegraph avenue, Oakland, for New East Bay Hospital (Oakland Hospital Association).... .....$600,000
Completion of municipal band stand in Lakeside Park $60,000
Additional improvements for the Howard Company $100,000
Two-story store and apartment building, Patterson, for J. H. Evans.....$30,000
One-story concrete and terra cotta bank building, for the Savings Bank of Santa Rosa $60,000
Alterations to the Carver National Bank, St. Helena $10,000
Ten houses in Willows for local capitalists $30,000
Six houses in Newman.....$20,000

JAMES T. LUDLOW, Construction Engineer, 604 Mission street, San Francisco:
Two-story reinforced concrete cold storage plant and warehouse, San Jose, for Security Warehouse & Distributing Company $500,000

EARL B. BERTZ, Foxcroft Bldg., San Francisco:
Fifteen dwellings in Seacliff, San Francisco, for Allen & Company.....$60,000
Two-story frame and plaster residence and garage, Seacliff, San Francisco, for John C. Brickel $25,000

JOHN REID, JR., First National Bank Bldg., San Francisco:
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Club house $45,000

WM. H. WEEKS, 75 Post street, San Francisco:
Court house, either reinforced concrete or enameled terra cotta, Independence, Inyo county, California.....$150,000
One-story brick school building, Antioch, Contra Costa county.....$100,000
One-story frame and brick veneer schoolhouse, Winters, Yolo county.....$37,000
Four-story reinforced concrete and brick hotel, Turlock, for John B. Kerfoot.... .....$200,000
Red Bluff National Bank.....$60,000
Grammar schools, Santa Rosa...$200,000
Two grammar schools, Turlock..$90,000
Gymnasium and auditorium, Sebastopol. $40,000
County hospital group, Woodland, Yolo county $100,000
Residence for Horace Crane, Turlock... .....$20,000
Branch Carnegie library, Santa Cruz.... .....$4,500
Gymnasium for Gonzales, Monterey county $20,000
Additions to King City hotel.....$35,000
Country Club house, Woodland...$75,000
Grammar school building, Hollister (bonds to be voted).....$140,000

G. A. LANSBURGH, Gunst Bldg., San Francisco:
One-story and basement brick and terra cotta Carnegie Library (North Beach Branch), Powell street, between Washington and Jackson streets, San Francisco $45,000
One-story and basement Carnegie Library (Presidio Branch), Sacramento street, between Baker and Lyon streets, San Francisco $55,000
Class A theatre and seven-story office building, Market and Taylor streets, San Francisco, for Ackerman, Harris & Loew interests (Geo. Lamb, New York architect, associated) $1,000,000
New Orpheum Theatre, San Francisco.. .....$1,000,000
NOTE.—Six other Orpheum theatres, locations to be designated later on, will be designed by Mr. Lansburgh.

C. E. GOTTSCHALK, Phelan Bldg., San Francisco:
Two-story and basement class A bank and office building, 100x160 (foundations sufficiently heavy to carry ten additional stories) Montgomery street, between Post and Sutter streets, San Francisco, for the First Federal Trust Company and First National Bank $300,000
Group of houses for Urban Realty Company (W. C. Duncan & Co., builders)... .....$8,000 to $12,000 each

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One-story addition to three-story brick hotel, Western Hotel Co., Marysville, J. R. Foster, Mgr. $20,000
Additional floor to seven-story class A office building in San Francisco..$100,000
Two-story reinforced concrete garage for Ford agency, Sacramento.....$65 000
Auto show room building in the Van Ness avenue auto district, San Francisco $65,000
Two-story concrete garage, Ellis street, San Francisco $30,000

A. H. KNOLL, Hearst Bldg., San Francisco:
Reinforced concrete and brick auto sales building, Pine and Polk streets, San Francisco, for J. Eisenbach.....$40,000
Ninety six-room cottages in Havens Court, East Oakland, for Louis Steckler (George W. Boxton & Son, builders)... .....$300,000

WM. KNOWLES, Hearst Bldg., San Francisco:
Three-story reinforced concrete garage, 150x155, Fifth and Howard streets, San Francisco, for Pacific Gas & Electric Company (under construction)..$250,000

T. RONNEBERG, Construction Engineer, Crocker Bldg., San Francisco:
Community Center, Thirteenth street and McCoppin avenue, San Francisco, for Wesley M. E. Society.....$65,000

LOUIS C. MULLGARDT, Chronicle Bldg., San Francisco:
Greek theatre and other buildings, designed in exposition type, near Highland avenue and Bolton street, Los Angeles, for the Theatre Arts Alliance..$1,000,000

S. HEIMAN, 57 Post street, San Francisco:
Four-story reinforced concrete class B factory, 125x200, Potrero District, San Francisco $175,000
Concrete and brick garage, Post and Leavenworth streets, San Francisco, for Goldberg, Bowen & Company....$15,000
Brick veneer undertaking establishment and garage, Buchanan street, near Turk street, San Francisco, for Chevra Kadisha (contract let) $15,000

LANGE & BERGSTROM, Construction Engineers, Sharon Bldg., San Francisco:
Five-story reinforced concrete loft building, Third and Bryant streets, San Francisco, for Schwabacher-Frey Company.. .....$200,000

LEO J. DEVLIN, Pacific Bldg., San Francisco:
Hospital buildings for St. Joseph's Hospital, Park Hill and Buena Vista avenue, San Francisco $700,000

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Residence at Los Gatos for C. H. Perkins (under construction) $15,000

H. J. BRUNNIER, Construction Engineer, Sharon Bldg., San Francisco.
Reinforced concrete warehouse and office building, 110x240, Eureka, Humboldt county $85,000
Concrete and steel boiler and fuel house, Samoa, near Eureka, for Hammond Lumber Company (under construction).....$75,000
Four-story reinforced concrete factory for M. L. Bath Co., Ltd., Shreveport, La.....$500,000

KENNETH MACDONALD, 234 Pine street, San Francisco:
Residence, Broadway and Webster streets, San Francisco, for Harry Hill....$40,000
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McDONALD & KAHN, Rialto Bldg., San Francisco:
Six-story reinforced concrete loft building, for Haas Bros., Spear and Folsom streets, San Francisco $250,000
Three-story reinforced concrete auto sales building, Van Ness avenue, between Sacramento and Clay streets, San Francisco, for Abe Haas (10% completed)...$100,000
Four-story reinforced concrete building, Sacramento street and Van Ness avenue, San Francisco, for Clarence Walter (10% completed) $175,000
Five-story and basement reinforced concrete building, 150,000 square feet, Van Ness avenue and Sacramento street, San Francisco, for L. D. Allen (50% completed) $260,000
One-story reinforced concrete auto sales building, Jackson street, between Van Ness avenue and Franklin street, San Francisco, to be occupied by the Cunningham Agency (20% completed)....$48,000
Two-story fireproof office and warehouse building, Third and Brannan streets, San Francisco, for the Gunst Cigar Store Co. (25% completed) $90,000

HENRY C. SMITH, Humboldt Bank Bldg., San Francisco:
Residence for Dr. A. Abrams, Sea Cliff, San Francisco $12,000
Three-story frame apartment house, Union street, near Taylor, San Francisco $25,000

FRANK V. MAYO, 512 Farmers and Merchants Bank Bldg., Stockton:
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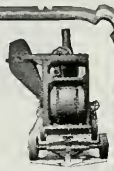

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Brick service building for G. Ghirardelli, 940 North Point, San Francisco..$70,000

T. PATERSON ROSS, 310 California street, San Francisco:
Second unit to Forest Lawn Memorial Park Mausoleum, Los Angeles, California $125,000
Eight-story reinforced concrete community apartment house, Hyde and Filbert streets, San Francisco, for W. B. Gray and others $300,000
One-story brick warehouse, Howard street, between Twelfth and Thirteenth streets, San Francisco, for John Ponningsen (contract let to Barrett & Hilp)..... .....$21,000

EDWARD T. FOULKES, Crocker building, San Francisco:
One-story brick store building, Bush, east of Powell street, for Geo. A. Webster.. .....$25,000
Rustic church for Third Church of Christ, Scientist, Prince street, east of College avenue, Berkeley.....$21,000
Two-story reinforced concrete warehouse, Eighth street, near Oak, Oakland, for Oakland Tribune $25,000
Country residence, Del Monte, Monterey county $60,000

FREDERICK WHITTON, Manager of Construction, 369 Pine street, San Francisco:
Department store building, for Weinstock, Lubin & Company, 11th and "J" streets, Sacramento $750,000
Additions to Schmidt Lithograph Company's plant, Second and Bryant streets, San Francisco $150,000
Hotel at Hollister $100,000

ARTHUR G. BUGBEE, Sharon Bldg., San Francisco:
One-story and basement reinforced concrete garage, Dolores street, from Market to Fourteenth streets, San Francisco, for the San Francisco Savings Union & Trust Company $30,000

MAXWELL G. BUGBEE, 619 Washington street, San Francisco:
Five-story class C apartment house, Hyde street, San Francisco, for Dr. Peters.... .....$80,000

HENRY H. MEYERS, Kohl Bldg., San Francisco:
Additional units to reinforced concrete hospital group, 14th avenue and East 27th street, Oakland, for Alameda County Supervisors. Contract for first unit will be let this month for approximately $400,000. Total estimated cost of hospital complete $1,500,000

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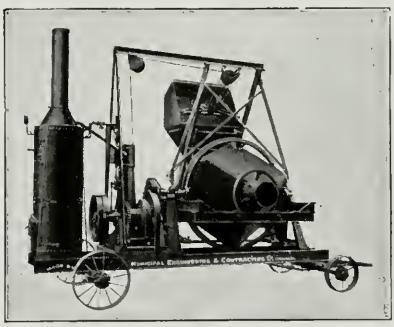

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Residence on Broadway, near Baker street, San Francisco, for Stetson G. Hindes $30,000
Two-story garage building, on Washington street, near Steiner, San Francisco, for Mr. Louis Rothenberg..... .....$40,000

WARD & BLOHME, Canadian Bank of Commerce Bldg., San Francisco:
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Store building and alterations to present store, for Weed Lumber Company..... .....$75,000
Residence for H. O. Harrison....$30,000
Residence for W. P. Fuller, Jr....$35,000
Construction work and decoration of Exposition Auditorium for Pacific Auto Show $20,000
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Alterations to residence for Mr. Edward Van Bergen $4,000
Alterations and additions to Nuttall Bldg., 314 Sutter street $6,000
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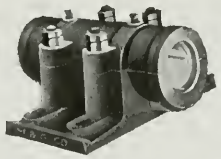
One-story fireproof reinforced concrete with steel truss roof warehouse, 120x275, in the spur track district, San Francisco $100,000
Two-story class A auto sales building and garage, 70x160, Valencia street, east of 16th street, San Francisco..... .....$40,000
Residence in St. Francis Wood, $12,000
Five-story reinforced concrete apartment house, north side Sutter street, San Francisco $60,000



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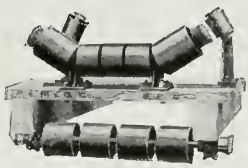

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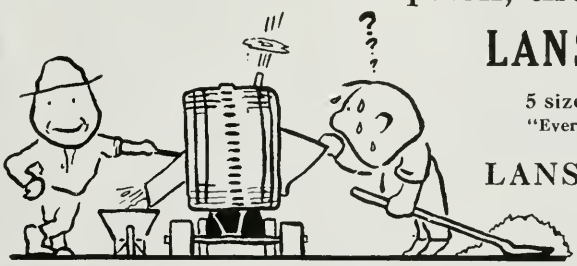

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Moving picture theatre, 29th and Mission streets, San Francisco, for Lyceum theatre $90,000

Ten-story class A store and office building, Post and Powell streets, San Francisco, for Wm. M. Fitzhugh (Bakewell & Brown, associated) $400,000

Fifteen-story office building, San Francisco $500,000

Eight-story class B apartment house.... .....$350,000

Two out of town theatres.....$2,000,000

C. C. DAKIN, 110 Sutter street, San Francisco:

Spanish residence for Dr. J. I. Beattie, Hanchett Park, San Jose.....$15,000

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LEWIS P. HOBART, Crocker Bldg., San Francisco:

Aquarium in Golden Gate Park, San Francisco $250,000

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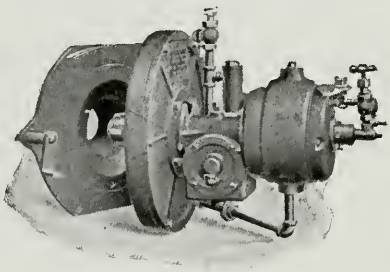

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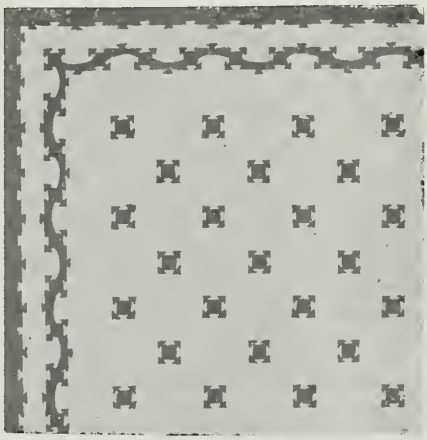

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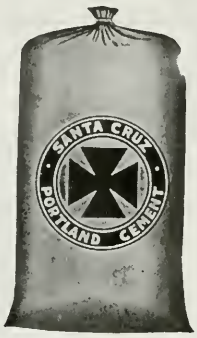

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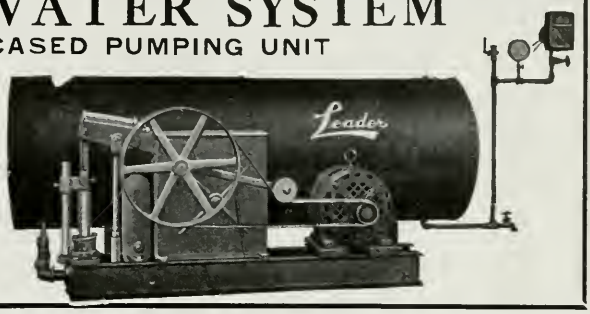

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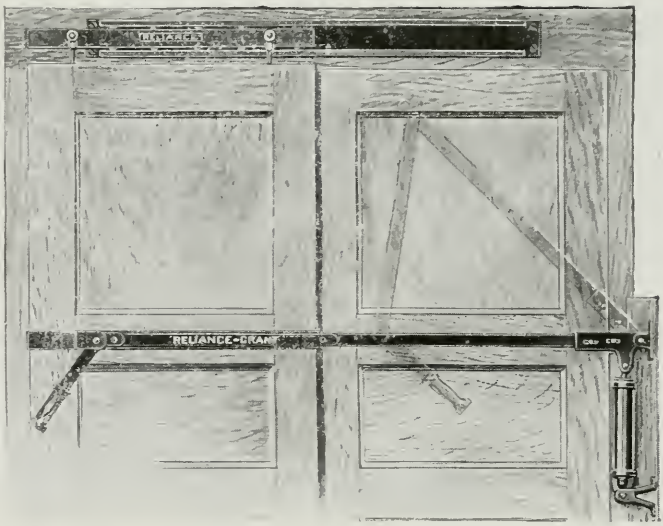

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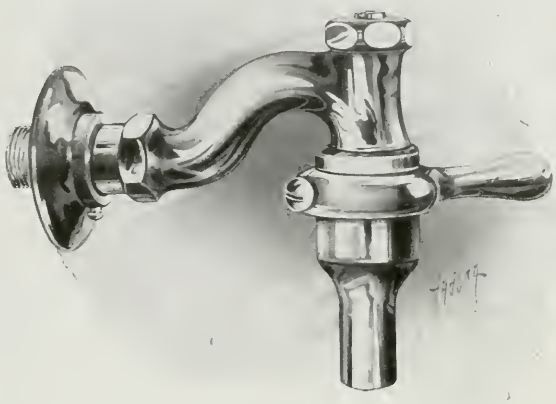

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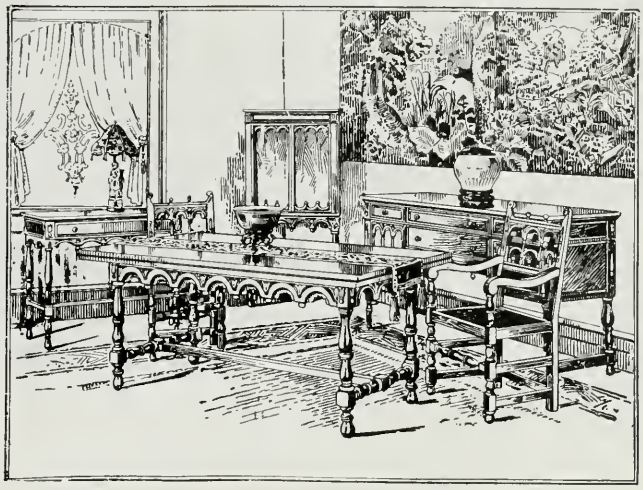

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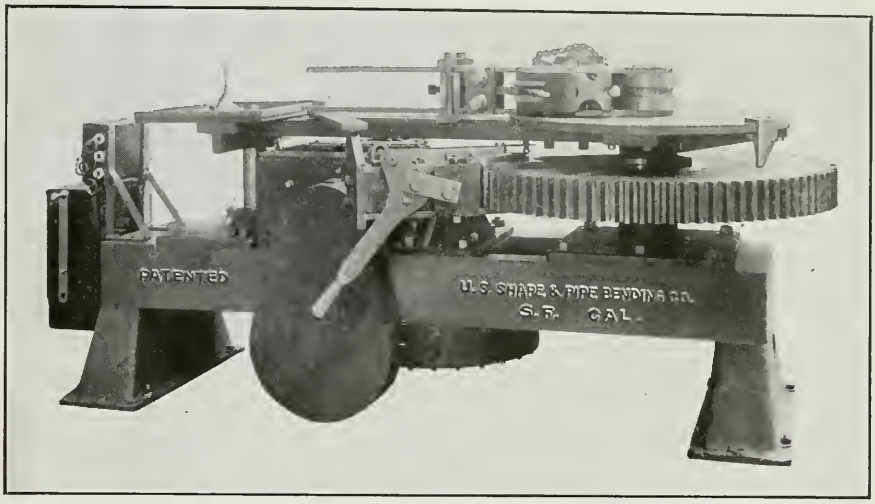

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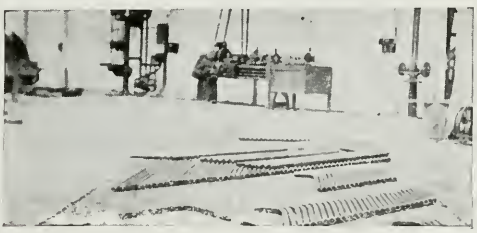

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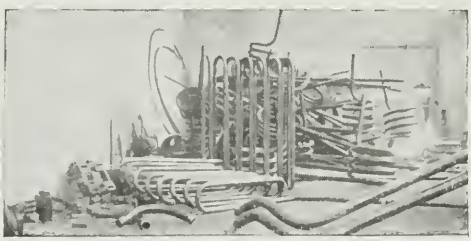

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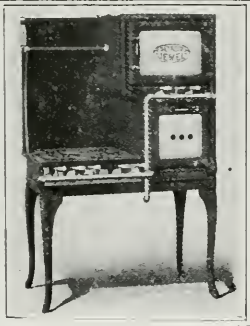

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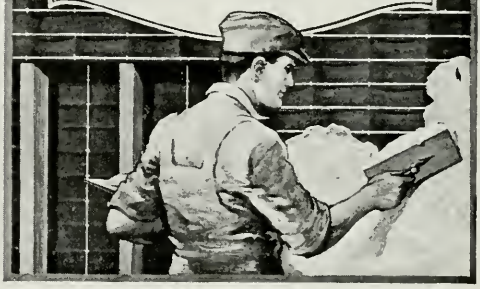

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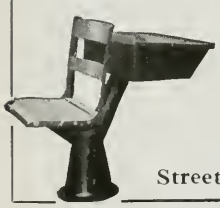

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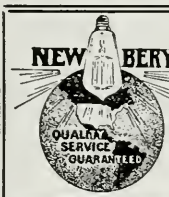

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